

MIDDLE EAST@WAR No.37

MIGS IN THE MIDDLE EAST

VOLUME 2: SOVIET-DESIGNED COMBAT AIRCRAFT
IN EGYPT AND SYRIA, 1963-1967



David Nicolle & Tom Cooper

MIDDLE
EAST@WAR
SERIES

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NOTE

In order to simplify the use of this book, all names, locations and geographic designations are as provided in *The Times World Atlas*, or other traditionally accepted major sources of reference, as of the time of described events. Similarly, Arabic names are romanised and transcribed rather than transliterated. For example: the definite article al- before words starting with 'sun letters' is given as pronounced instead of simply as al- (which is the usual practice for non-Arabic speakers in most English-language literature and media). Instead of using the diacritical marks to represent the letter 'ayn, double a is used, while names like 'Faisal/Feisal' are spelled as 'Faysal'.

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ABBREVIATIONS

AB	air base
ADC	Air Defence Command (Egypt)
AMAN	<i>Agaf HaModin</i> (Military Intelligence Directorate, Israel)
An	Antonov (the design bureau led by Oleg Antonov)
ASCC	Air Standardisation Coordinating Committee
BAC	British Aerospace Corporation (later BAe Warton)
BAe	British Aerospace
BAF	Bangladesh Air Force
CAP	combat air patrol
CAS	close air support
CGS	Chief of General Staff
CIA	Central Intelligence Agency (USA)
CO	commanding officer
COIN	counterinsurgency
DHC	de Havilland Canada
DIA	Defence Intelligence Agency (USA)
DM1	Main Directorate of Military Intelligence (UAR/Egypt)
DMI	Directorate of Military Industries (Egypt & Iraq)
DMZ	de-militarised zone
EAF	Egyptian Air Force (1952-1958 & 1972 onwards)
FAC	forward air controller
FCS	fire-control system
GenStab	General Staff of the Soviet Armed Forces (roughly equivalent to the Joint Chiefs of Staff, USA)
GMID	General Military Intelligence Directorate (Iraq)
GRU	<i>Glavnoye razvedyvatel'noye upravleniye</i> (Main Intelligence Directorate of the Soviet Armed Forces)
HAWK	Homing-All-The-Way-Killer (US-made SAM)
IADS	integrated air defence system
IAF	Indian Air Force
IAP	international airport
IDF	Israel Defence Force
IDF/AF	Israel Defence Force/Air Force
II	Ilyushin (the design bureau led by Sergey Vladimirovich Ilyushin, also known as OKB-39)
INA	Iraq News Agency
IPC	Iraq Petroleum Company (1929-1961)
IrAAC	Iraq Army Aviation Corps
IrAF	Iraq Air Force (1958-2003)
IrAF-ID	Iraq Air Force – Intelligence Department
IRGC	Islamic Revolutionary Guards Corps (Iran)
KAF	Kuwait Air Force
LAAF	Libyan Arab Air Force
Luftwaffe	German Air Force
MiG	Mikoyan i Gurevich (the design bureau led by Artyom Ivanovich Mikoyan and Mikhail Iosifovich Gurevich, also known as OKB-155 or MMZ 'Zenit')
NATO	North Atlantic Treaty Organisation
NWC	National Water Carrier (Israel)
ONI	Office of Naval Intelligence (US Navy)
OPEC	Organization of Petroleum Exporting Countries
RAF	Royal Air Force (United Kingdom, since 1918)
RBAF	Royal Bahrain Air Force
RCC	Revolutionary Command Council (Egypt)

RSAF	Royal Saudi Air Force
RWR	radar warning receiver
SAM	surface-to-air missile
SEATO	South-East Asia Territory Organisation
SMB.2	Super Mystère B.2 (Dassault-designer supersonic jet fighter)
SNCASO	Sud-Oest Aviation (France)
Su	Sukhoi (the design bureau led by Pavel Ossipovich Sukhoi, also known as OKB-51)
SyAAF	Syrian Arab Air Force
TPC	Turkish Petroleum Company (1912-1925; subsequently IPC)
UAEAF	United Arab Emirates Air Force
UAR	United Arab Republic (Egypt and Syria from 1958 until 1961, and Egypt until 1972)
UARAF	United Arab Republic Air Force (EAF and SyAAF from 1958 until 1961, and EAF until 1972)
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
USAF	United States Air Force
USN	United States Navy
USSR	Union of Soviet Socialist Republics (also 'Soviet Union')
VKS	<i>Vozdushno-kosmicheskoye sily</i> (Russian Air-Space Forces, since 2015)
Yak	Yakovlev (the design bureau led by A. S. Yakovlev, also known as OKB-115)

INTRODUCTION AND ACKNOWLEDGEMENTS

Considering the widespread use of air power in the Middle East over the last 110 years, it remains striking to find out how few publications about local air forces have been released over that time – and especially how few publications about local air forces based on *local* sources have been prepared and published. If at all, the history of Arab air forces has been researched and presented to some extent from the Israeli point of view, and in a few cases from the Western – especially that of the United States of America's (USA) – point of view, frequently at least 'coloured' by specific Israeli 'impressions'; but rarely presented from the point of view of Arabs and their armed services. In the opinion of the authors of this book, this creates the impression that 'Arab points of view do not matter': the impression where the Arab-Israeli conflict is a one-sided affair, in which the Arabs are the only party that is aggressive and intolerant, causing one armed conflict after another, and that the Arabs 'always lie' – and thus are neither interesting nor important to research. Our standpoint is that no wars can be fought without the involvement of at least two parties, and that thus points of view of all the involved parties very much do matter – especially when it comes to a conflict that is so heavily 'loaded', about which there is so much short-sightedness, so much hatred, and so much of the worst sorts of prejudice and taking sides, as the Arab-Israeli conflict.

For the purpose of this study, we have drawn upon a wide range of Arab and Western primary sources. Foremost amongst these are official documents obtained from Arab archives over the years. The centrepiece was the so-called *Document 44* (for details, see Bibliography): a 1,100-page summary of one of at least three

known official investigations into the reasons for the catastrophe that befell the Egyptian armed forces during the June 1967 Arab-Israeli War. Several excerpts from this have not only been useful for their factual information, but for cross-examination of the results of our decades-long practice of recording oral history through interviewing dozens of participants. Perhaps the second most important document that played an important role in the research for this book is the *Manual on the Techniques of Piloting and Military Use of the MiG-21*. Issued in the USSR, in Russian, in around 1960, this is a document teaching pilots how to fly and fight in this type and is known to have been handed out to several export customers for the Mikoyan i Gurevich MiG-21 over the following years. Delivered to the USA by Iraq in sometime in late 1963, it was translated by Russian-linguists of the Foreign Technologies Division (FTD) of the US Air Force (USAF) as *Fishbed C/E Aerial Tactics* in 1964. Multiple interviews with early Iraqi and Syrian MiG-21 pilots have revealed that that this thick textbook played a crucial role in the training of pilots flying this type in at least these two countries: although currently having no related evidence, for reasons explained in detail in this volume, the authors are certain that this was the case in Egypt as well. Additional documents include a selection of reports that can be downloaded from the website of the Freedom of Information Act Electronic Reading Room of the Central Intelligence Agency (CIA) of the USA. Although it is now well-known (or at least should be well-known) that intelligence assessments and estimates – a factor upon which both the USA and Israel became hopelessly overdependent for their decision-making processes over the last 50-60 years – cannot always be taken at face value, the experience based on years of their cross-examination with information provided from first-hand sources has shown that especially the larger CIA intelligence assessments did at least ‘came close’. Indeed, it turned out that much of the content of US intelligence reports confirms the information collected during interviews with participants.

Finally, and exactly as in our earlier works on this and similar topics, we have made extensive use of research by Israeli historians renowned for sticking to the facts – often irrespectively of how unpleasant these might be for their own nation. Correspondingly, this study is neither ‘revisionism’ nor ‘anti-Israeli bias’, and even less so can it be reduced to a ‘one-sided dismissal of everything Israeli’ (and especially various claims by prominent pilots of the Israeli Air Force/Defence Force) – as claimed by several Western and Israeli ‘readers’ of Volume 1 of *MiGs in the Middle East* (ironically, most of whom appear neither to have actually read that book, nor understood it). Instead, it is a critical and comprehensive cross-examination and re-examination of the events and persons described, emphasising the military history aspect.

While we have published quite extensively on similar topics at earlier times, our current approach to this project is slightly different. The primary aim was not only to record what has happened and attempt to reconstruct the operational history of specific armed services, but to focus on why (in alphabetic order) Egypt, Iraq, and Syria purchased military aircraft from the Union of Soviet Socialist Republics (USSR, colloquially ‘Soviet Union’), how they trained their personnel on these, and how they deployed them in military operations. The primary reason is that these three aspects remain some of poorest-researched, and thus the most misunderstood factors of such importance for the flow of the Arab-Israeli conflict of the 1960s and 1970s. This, as well as the fact that we have meanwhile covered air forces of Algeria, Iraq, and Morocco to great depth in our other publications from

the *Africa@War* and the *Middle East@War* series published by Helion, resulted in the decision to focus this volume almost entirely on Egypt and Syria.

While acting as a sequel to the *Air Power and Arab World* mini-series, and a complimentary source of reference for a number of other books published in Helion’s *Middle East@War* series (for details, see Bibliography), the principal purpose of this project can thus be described as an ‘upgrade of an upgrade’: this is, essentially, the ‘third-generation of publications’ on this topic by the same core team of authors. Our aims remain *inclusiveness* and emphasising contextualisation while reconstructing the operational history of the Arab air forces equipped with military aircraft of designs from the USSR – including those of the Antonov, Ilyushin, Mikoyan i Gurevich, Sukhoi and Yakovlev design bureaus – between the mid-1950s and the mid-1970s. For this purpose, we have reviewed not only our own publications from the last 20 years, but also dozens of related Western and Israeli publications, upgraded everything with newly acquired information and photographs, wherever necessary and possible, and then focused the narrative on the air forces operating Soviet-made combat aircraft.

The research that led to this study began over 50 years ago and has been conducted with the help of countless participants and eyewitnesses over that time. Thus, there are many people who have kindly shared – often intriguing – personal stories, and to whom the authors would like to express their gratitude. Foremost are officers and pilots of Arab air forces including late Air Marshal Alaa Barakat (EAF, ret.), Air Marshal Mustafa Shalabi el-Hinnawy (EAF), Air Marshal Farouq el-Ghazzawy (EAF, ret.), Air Marshal Badr Domair (EAF, ret.), late Lieutenant-General Arif Abd ar-Razzaq (IrAF, ret.), late Air Marshal Tahir Zaki (EAF), Air Vice Marshal Ahmed Abbas (EAF, ret.), Major-General Alwan Hassan al-Abossi (IrAF, ret.), Major-General Ahabadin Ayman (ADC, ret.), Air Vice Marshal Qadri Abd el-Hamid (EAF, ret.), Air Vice Marshal Zia el-Hefnawi (EAF, ret.), Air Vice Marshal Mamdouh Heshmat (EAF, ret.), Air Vice Marshal Reda el-Iraqi (EAF, ret.), Air Vice Marshal Hussein el-Kfass (EAF, ret.), Air Vice Marshal Ahmed Kilany (EAF, ret.), Air Vice Marshal Mustafa Nabil al-Masri (EAF, ret.), Air Vice Marshal Abd al-Moneim Mikaati (EAF, ret.), Air Vice Marshal Samir Aziz Mikhail (EAF, ret.), Major-General Nassr Moussa (EAF, ret.), Major-General Mohammed Naji (IrAF, ret.), Major-General Salim Saffar (IrAF, ret.), Air Vice Marshal Siad Shalash (EAF, ret.), Air Vice Marshal Sa’ad ad-Din Sherif (EAF, ret.), late Air Vice Marshal Mohammed Abdel Moneim Zaki Okasha (EAF), Air Vice Marshal Nabil el-Shuwakri/Shoukry (EAF, ret.), Air Vice Marshal Mamdouh Taliba (EAF, ret.), Major-General Ihsan Shurdom (RJAF, ret.), Major-General Medhat Zaki (EAF, ret.), Major-General Ahmed Yusuf (EAF, ret.), Air Vice Marshal Tahsin Zaki (EAF/ADC, ret.), late Brigadier-General Ahmad Sadik Rushdie al-Astrabadi (IrAF), Brigadier-General Faysal Abdul Mohsen (IrAF, ret.), Brigadier-General Farouk Abdeen (RJAF, ret.), Air Commodore Tamim Fahmi Abdullah (EAF, ret.), late Air Commodore Gabr Ali Gabr (EAF, ret.), Air Commodore Fikry el-Gahramy (EAF, ret.), Air Commodore Fikry el-Gindy (EAF, ret.), late Air Commodore Mustafa Mohammed Hassan (EAF), late Air Commodore Mustafa Hafez (EAF), Air Commodore Fuad Kamal (EAF ret.), Air Commodore Abdel Moneim el-Tawil (EAF ret.), Air Commodore Ibrahim Gazerine (EAF ret.), Group Captain Kapil Bhargava (IAF, ret.), late Group Captain Saif-ul-Azam (PAF/BAF), Wing Commander Talaat Louca (EAF, ret.), Wing Commander Usama Sidqi (EAF, ret.), Wing Commander Kamal Zaki (EAF ret.),

Squadron Leader Wagdi Hafez (EAF ret.), Captain Abdelmajid Tayyari (LAAF, ret.).

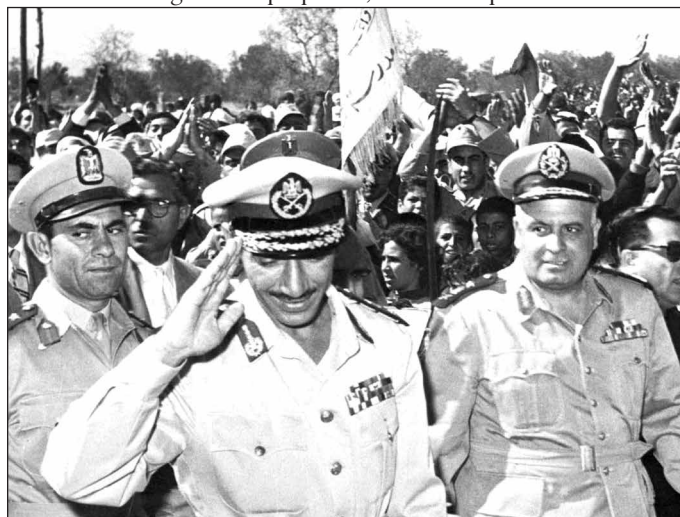
Our thanks go to Mr Tarek el-Shennawy (pilot of Egypt Air and son of late Air Vice Marshal Abdel Moneim el-Shennawy), Mr Ahmad Keraidy (pilot of Egypt Air and son of late Air Vice Marshal Abdel Wahhab el-Keraidy), Mrs Patricia Salti (leading historian of the Royal Jordanian Air Force), Mrs Leila, the late Mrs Khouda, and the late Mrs Mona Tewfik for permission to use their family archives. We would also like to express our special thanks to Martin Smisek from the Czech Republic for working through the Czech National Archive for many years; Milos Sipos from the Slovak Republic for his help in research about the Iraqi and Syrian air forces; to Dmitry Zubkov from Bulgaria for information on Soviet support for the Egyptian military intervention in Yemen in 1962-1963; to Nour Bardai, Dr Abdallah Emran, and Sherif Sharmi from Egypt; to Ali Tobchi from Iraq, Albert Grandolini from France, and Holger Müller from Germany for conducting additional interviews and faithfully providing many precious bits and pieces of information over the years. We wish to thank Jens Heidel for help with additional photographs of the United Arab Republic Air Force from the 1950s and 1960s; to Jean-Marie Langeron from France for his help with precise performance comparisons between the primary fighter-bomber types discussed in this study; Tomislav Mesaric from Croatia for his additional tips on this topic; and Ass'aad Dib in Lebanon for translations of Ali Muhammad Labib's history of the Egyptian Air Force; to Jeroen Nijmeijer from the Netherlands for his help with research about deliveries of Soviet aircraft; and to Lon Nordeen in the USA, for permission to use some of his research including interviews with a number of Egyptian participants. Last, but not least, our thanks go to Farzin Nadimi for his research in the archives of the Air Ministry in Great Britain, and to Hicham Honeini from Lebanon for his patience and kind help with translations of various publications and documentation from Arabic.

1

SUPERSONIC TIMES

Although suffering heavy material damage during the tripartite aggression of 1956, Egypt emerged out of the Suez War as politically victorious. The President of the Arab Republic of Egypt, Gamal Abdel Nasser, not only spoiled the designs of two former colonial powers – Great Britain and France – and their ally Israel to topple him and re-establish their dominance over the entire Middle East, but eventually forced them to withdraw. Arguably, neither was Nasser's achievement: while a relatively successful military commander during the Palestine War, during the 1950s he crystallised as a populist authoritarian. Drawing upon the military as the key to power, he managed to raise the standard of living

in Egypt, but completely destroyed all opportunities for popular participation, and created a regime obsessed with its own security, overdependent on repression, nepotism, and corruption for survival. On the international level, and while repeatedly failing on the military level, he showed little other than extreme nationalist tendencies. Ironically, a mix of effective propaganda and popular support created a public image of Nasser as somebody with the personal attributes of the leader of all Arabs – especially those living in artificial countries created by Great Britain and France on the basis of the Sykes-Picot Treaty of 1916. The result was the so-called 'wave of pan-Arabism' that quickly swept over the Middle East in 1957-1958, prompting large segments of the public and prominent political- and military leaders in the Arab Republic of Syria, the Republic of Lebanon, Hashemite Kingdom of Iraq, Hashemite Kingdom of Jordan, and also the Kingdom of Saudi Arabia, the state of Kuwait (then still a British protectorate), the Imamate of Yemen, and the Kingdom of Libya, to demand the realisation of the centuries-old dream of a union of all the Arab countries. In early 1958, the governments in Damascus and Sana'a invited Cairo to form a political union. Thus came into being the United Arab Republic (UAR). While having a potential to become a regional superpower, the UAR proved an ill-fated



Field Marshal Amer on arrival in Syria: acting from a position of not really being accountable even to Nasser, his mismanagement of the 'Northern Province' was crucial in provoking a counter-coup that collapsed the Union in September 1961. (Albert Grandolini Collection)



Nasser seen amid jubilant masses on arrival in Damascus to seal the establishment of the United Arab Republic in February 1958. (Albert Grandolini Collection)

political structure: Yemen never became more than loosely associated, if playing any part whatsoever, while, facing their complete domination by Egypt – instead of a federation of two Arab peoples as many of them had imagined – the military and political establishments of Syria revolted. In September 1961, they staged a coup that ended the country's union with Egypt, and led to the re-establishment of the Syrian Arab Republic. This set the stage for the next period during which Arab air forces acquired combat aircraft made in the USSR.

LEGACY OF THE UAR

The UAR might have been short-lived, but the idea of a union of the Arabs was not. On the contrary: just the creation of the union between Egypt and Syria caused severe disturbances in the French-created Lebanon, while the British-crafted and -supported royal houses of Iraq and Jordan reacted by attempting to merge their countries into the Arab Federation. Always deeply resenting the British dominance, the armed forces of Iraq exploited the opportunity to topple the monarchy on 14 July 1958, almost provoking a similar development in Jordan.

Regardless of how much all the major Arab statesmen attempted to keep their countries out of that affair, Western powers were obsessed with monitoring the situation in the Middle East through the prism of the Cold War. Events in Iraq and Lebanon were viewed as another element in the global confrontation between the US-dominated North Atlantic Treaty Organisation (NATO) and the Warsaw Pact, dominated by the USSR: with perceived 'Communist encroachment' of the Middle East, steered from Moscow. Irrespective of the ideologies, political aims, or interests of local governments – and, indeed, their own long-term interests – Washington, London and Paris tended to declare any government buying Soviet-made arms as a 'Soviet ally', if not an outright 'Soviet puppet'. Therefore, keen to 'prevent a Soviet penetration', the USA and Great Britain launched military interventions in Lebanon and Jordan, respectively – actually making it clear that at least these two superpowers were not willing to give up on their own designs for the region. Moreover, the leadership of the USSR refused to heed Nasser's demands for its own military intervention in the Middle East on behalf of pan-Arab movements, while the new government in Baghdad – led by Abd al-Karim Qasim – then went its own way.

In turn, the latter two factors caused feuds between Cairo and Damascus, Cairo and Baghdad, and Cairo and Moscow, resulting in a period during which relations between the governments in question could only be described as those of another 'Cold War' – and an outright 'arms race' between Cairo and Baghdad in particular. With Egypt, Iraq, Syria, and the USSR at odds, the British found it easy to prevent Kuwait from joining the UAR, even if this meant they had to grant the country independence in 1961. As subsequent developments were to show, and although badly shaken by internal dissent even within the royal family, and a major, years-long economic crisis, the rift between traditional power centres in Cairo, Damascus, and Baghdad, and the Soviet refusal to become involved in local affairs further enabled the survival of the Kingdom of Saudi Arabia. The situation did not improve one notch when, in 1963, Qasim's government succumbed to another military coup. While proving enthusiastic about effecting a federation, Arif found Nasser frustrated by all the disappointments of the last few years: Cairo did decide to retain United Arab Republic as of the official title of Egypt, but was not keen to become embroiled in another adventure as in Syria during 1958-1961.



Egyptian officers and other ranks, and members of their families, expelled from Syria, disembarking from a ship that returned them to Port Said in November 1961. (Albert Grandolini Collection)

NEW REQUIREMENTS

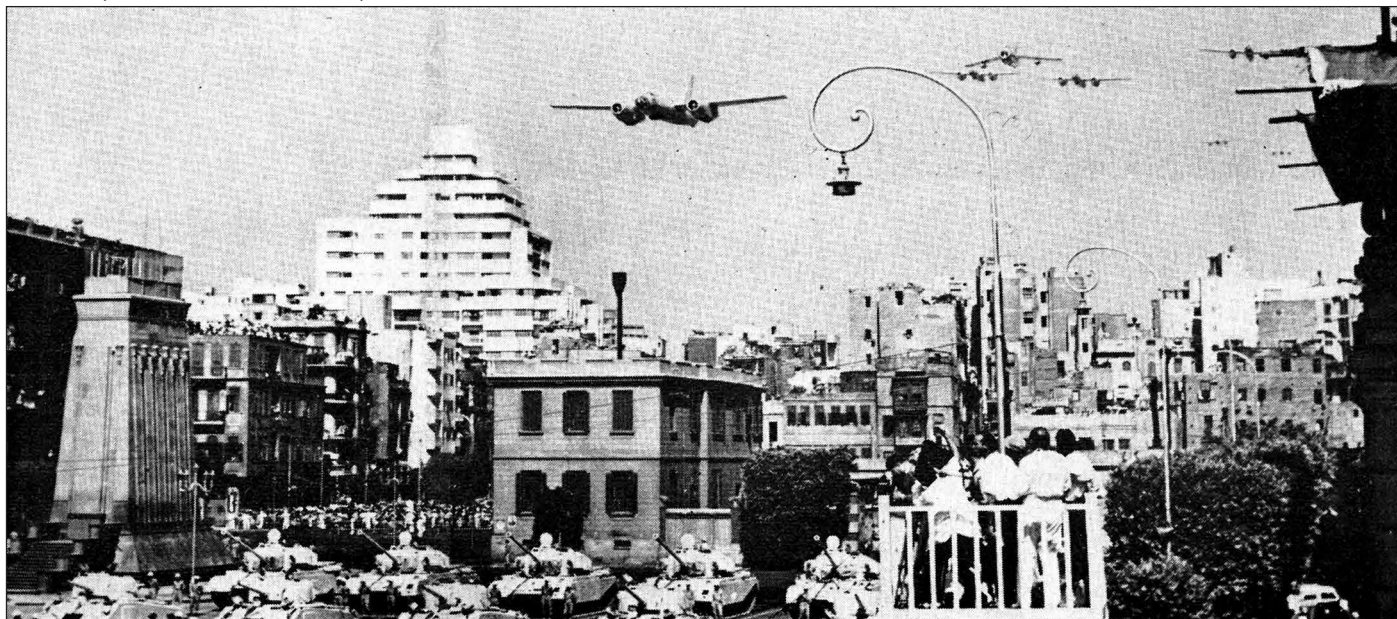
As described in Volume 1, all through the 1958-1961 period, the conflict between the UAR and Israel continued without abatement, reaching almost open war on at least three occasions. While clashes on the ground remained relatively limited, those in the air were particularly intensive, and resulted in the realisation that while now flown by ever better trained and more experienced pilots, the Soviet-made Mikoyan i Gurevich MiG-15bis and MiG-17F fighter jets that were now forming the backbone of the United Arab Republic Air Force (UARAF, as the EAF was officially redesignated once Egypt, Syria and the Imamate of Yemen united into the United Arab Republic in February-March 1958), were

underdogs in comparison to the latest jets in service with the Israeli Defence Force/Air Force (IDF/AF). Already the Dassault Mystère IVA – acquired by Israel starting in 1956 – outmatched both of the Soviet designs in terms of the top speed and the speed of climb, range, and armament. In 1959, Israel then acquired the first 24 Dassault Super Mystère B.2s (SMB.2), which were significantly faster, while at least as well armed as the earlier model. On top of this, the Main Directorate of Military Intelligence of Egypt (DM1) received the first reports about the Israelis negotiating for delivery advanced Générale Aéronautique Marcel Dassault Mirage III interceptors, and also that Iraq was in the process of receiving Tupolev Tu-16 medium bombers from the USSR.

The Mirage III was of particular concern for the UAR: first flown in June 1955, it underwent protracted development until evolving into a delta-winged, SNECMA Atar 09C engine powered and Mach 2 capable interceptor, equipped with Cyrano I bis radar and the brand-new Matra R.530 semi-active radar homing (SARH) air-to-air missile. In May 1961, Israel placed its first order for 24 such aircraft, later increasing this to 76, with first deliveries expected in 1962. Just due to its superior performance, the Mirage threatened to make everything operated by the UARAF completely obsolescent: this went so far that just the possibility of Mirages already being in Israel caused the UARAF to cease running



As of 1958-1961, the MiG-17F still formed the backbone of the UARAF's fighter force. With the type proving highly popular in service, and the UARAF still pursuing an intensive recruitment campaign (launched back in 1955), this resulted in most of the units operating it applying their insignia on aircraft. This photograph shows the front part of the MiG-17F piloted by Nazih Khalifa, the most successful Egyptian fighter-pilot of the 1956 Suez War. (Gamal al-Khalifa Collection)



Every year during annual celebrations of the Egyptian Revolution of 1952, the armed forces would stage a major military parade in downtown Cairo. This nearly always included low-level overflights by UARAF jets: in this case Il-28s and (ex-Syrian) MiG-17PFs. Notable along the bottom of the photograph are older, US-made M4 Sherman and more recent, British-made Centurion tanks – both leftovers from the times Egypt still purchased its arms in the West. (Albert Grandolini Collection)

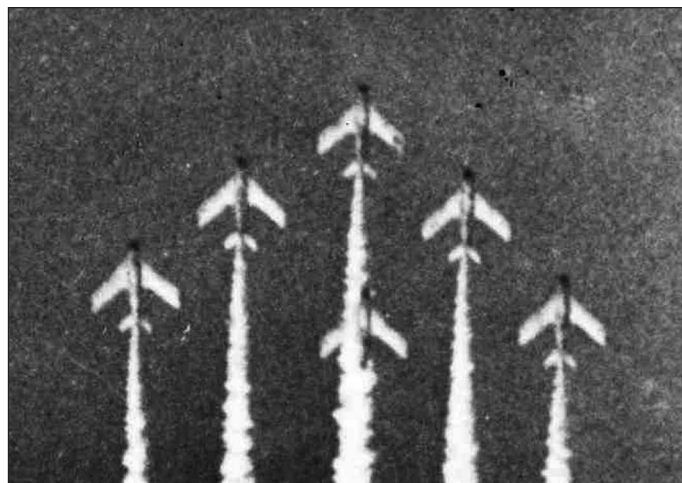
nocturnal reconnaissance overflights of Israel by its Ilyushin Il-28R reconnaissance bombers, described in Volume 1. Still, they were not the only motive for the content of the next arms deal negotiated between Cairo and Moscow.

ORGANISATIONAL PROBLEM

Despite the 'indigenous influence' of Nasser's and Amer's policies, the way in which the top political- and military leadership of the UAR reacted to developments of 1950-1961 was *de-facto* dictated by the way the Egyptian armed forces came into being in the 19th century, were taught to think and operate during the first half of the 20th century, and then acted during the 1950s. While their origins can be traced back to the reign of Muhammad Ali Pasha, the 'founder of modern Egypt', in the first half of the 19th century, the Egyptian armed forces were defeated by the British, in 1882, and then completely reformed. Over the following decades, the British developed a small, but cohesive, disciplined, and dedicated army, almost entirely 'Western' and indeed 'British' in its professional outlook. However, and contrary to the situation in Great Britain, where the Royal Air Force (RAF) was established as an independent branch of the armed forces in 1918, the British did their utmost to curb the development of an air force in Egypt: even once this was eventually established, in 1932, and for most of the following two decades, they successfully prevented it from obtaining modern equipment or advanced tactical training. This – British – influence, which ranged from uniforms, basic drill and diet, to armament and equipment, remained strong at the times the Egyptian armed forces were significantly expanded during the Palestine War of 1948-1949, and well after: indeed, the mass of Egyptian pilots and ground personnel were still 'flying and maintaining in English' even once the air force re-equipped with Soviet-made aircraft, and the establishment of the UAR resulted in introduction of a new, Arabic system of military ranks, in the 1955-1958 period. Ironically, immediately afterwards, each branch of the UAR armed forces went its own way: re-equipped with Soviet-made arms, the army hired German advisors – mostly Wehrmacht veterans of the Second World War – to develop strategy (including the system of ground defences in the Sinai) and tactics, and to train its most important units. On the contrary, the UARAF initially found no suitable replacement for British training manuals, while lessons it learned from the RAF – the essence of which was that acquiring better equipment and then training pilots and ground personnel for specific periods of time would result in an effective air force – drove it into another search for advanced combat aircraft. This way of thinking was little surprising considering the fact that the actual problem of both the army and the air force was the lack of advanced military education within its top ranks.¹

DOCTRINAL PROBLEM

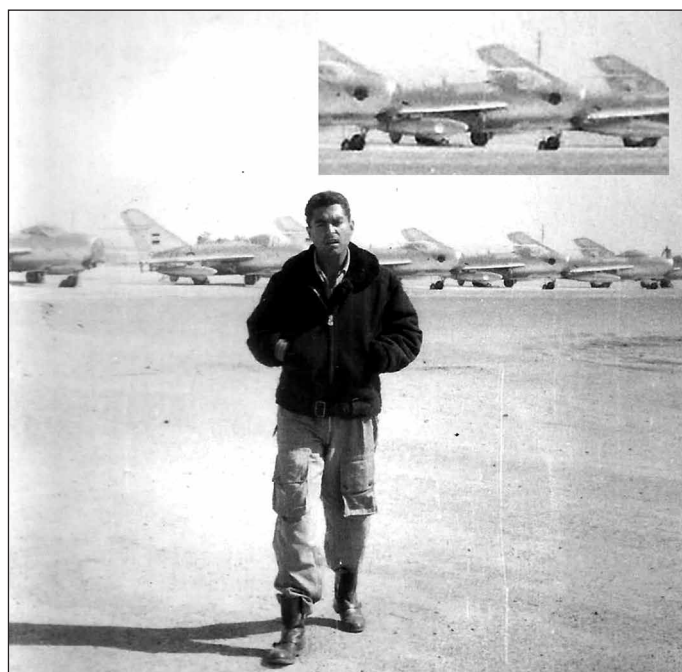
Although a former military officer and – in his function of President of the Arab Republic of Egypt, and then the President of the UAR – the Commander-in-Chief of the Armed Forces, Gamal Abdel Nasser foremost considered himself a 'politician, playing a game of chess'. Correspondingly, for most of the duration of his rule over Egypt, he hardly ever meddled in the issues related to the armed forces, except for when it was about obtaining additional equipment for them from abroad. From 1954 until 1964, Nasser's Minister of War, Deputy Commander-in-Chief Armed Forces, and the Chief-of-Staff of the Armed Forces of Egypt and the UAR, was Major-General Abdel Hakim Amer (still colloquially



Established in 1957, the seven-ship aerobatic team of the Egyptian Air Force (six jets of which are visible here) put on a public display at every opportunity. (Tahseen Zaki Collection)



Tahseen Zaki (centre) with members of the acrojet team, in front of a row of their MiG-17Fs. Notably, all of the jets in question have a chequerboard applied on their rudders: on some in blue, on others in red. (Tahseen Zaki Collection)



An unknown UARAF pilot in front of a row of MiG-17Fs. Notable are at least two jets wearing the same 'Black Leopard' insignia as applied on the MiG-15bis serial 2651, flown by Abdel Moneim el-Shennawy during his successful engagements with Israeli fighter jets on 11 and 23 December 1958 (see Volume 1 for details). (Jens Heidel Collection)



President Nasser taking a ride in a Mil Mi-1 helicopter of the UARAF in 1959. (Jens Heidel Collection)

promptly re-instated in his position by Nasser, this dispute caused a deep rift between the two: a rift that was to grow massively over the following decade. Nasser mistrusted Amer but appeased him through appointing him ever additional titles and positions in order to secure his loyalty and that of the armed forces, while surrounding himself with political favourites. In turn, Amer tamed his own political ambitions, but began surrounding himself with his own favourites from within the ranks of the armed forces. The overall result was a dead end: Nasser was aware that Amer had nothing like his level of popular support, but also that Amer had the armed forces at his back, while Amer knew that he could not survive without Nasser – and, while each became convinced that success in decision-making by a single man justified them to

addressed as 'Field Marshal'). Appointed to this position for his close friendship with Nasser and the important role he played in organising the revolution that toppled the monarchy in 1952, Amer was an officer that distinguished himself during the Palestine War, but received no additional military education after a staff course in the early 1950s. Similar was true for the commander of the air force: known as 'Uncle Hamada' to his friends and confidantes, Air Marshal Mahmoud Sidqi Mahmoud only underwent a staff course for mid-ranking officers, before being appointed the Chief-of-Staff Egyptian Air Force (still colloquially known as the 'Air Chief' at least until 1967) in 1952. Unsurprisingly, neither Nasser, nor Amer, or Sidqi Mahmoud had any ideas about latest military theories.

The results became obvious during the Suez War of 1956. Nasser dictated the military strategy: as a result of his decisions, Egypt suffered extensive material losses, but his overall diplomatic success not only earned him a reputation of top strategist, but – in his view, and that of the mass of his supporters – justified his decision to remain in power. Nominally at least, Amer's lack of formal military education mattered relatively little: his primary task was that of making sure the armed forces would remain loyal to the government. However, during the first two days of the Suez War he twice disobeyed Nasser's orders, sacked Sidqi Mahmoud when disappointed by the performance of the air force (resulting in a dramatic improvement of the latter), and skilfully ran the army. When Nasser realised what Amer was doing, his reaction was rage: on the evening of 31 October 1956, he forced Amer to re-instate Sidqi Mahmoud as Air Chief, to withdraw the army from the Sinai, and then ordered the air force not to resist the Franco-British aerial offensive. Feeling confirmed by subsequent developments, and bitterly complaining about heavy losses caused by the president's decisions, Amer resigned. Even if he was

remain in power, neither had a clear idea about how to improve the effectiveness of the armed forces.

SOVIET SOLUTIONS

To find a way out of this issue, Nasser and Amer decided to send ranking officers for higher military education abroad. Correspondingly, in 1958, Brigadier-General Abd el-Moneim Riyadh – already considered the most professional and best-educated Egyptian military officer of the time – travelled to Moscow for a course at the Military Academy of the General Staff of the Armed Forces of the Soviet Union. While Riyadh distinguished himself with his military and technical knowledge, and fluency in multiple languages, and was awarded the Golden General of the Class 1959, what he saw and heard in the USSR left lasting impressions.²

In reaction to experiences from the Korean War and regular violations of its airspace by US and British reconnaissance aircraft, the Political Bureau of the Central Committee of the Communist Party of the Soviet Union (colloquially 'Politburo') – essentially the government of the USSR, presided over by Joseph Vissarionovich Stalin until 1953, and Nikita Sergeyevich Khrushchev after – ordered the Soviet armed forces to develop air defences that would protect not only major urban centres of the country, but actually seal its airspace to enemy aircraft. The authority responsible for realising political orders, bridging the national security strategy and the military operational art, and thus exercising overall control over the armed forces in the Soviet Union, was the General Staff of the Armed Forces of the USSR (GenStab). The GenStab was (and, as the General Staff of the Armed Forces of the Russian Federation: it remains) *de-facto* its own branch of the Soviet armed forces: staffed by 'top brains' – hand-picked officers from all branches of the Soviet armed forces –



Abdel Moneim Riyadh seen here while already wearing the rank of Lieutenant-General, with President Nasser, in the early 1960s. (Tom Cooper Collection)

and while exercising no operational control, it was responsible for studying warfare, developing doctrine and strategy, and planning at strategic and operational levels. The GenStab (if mentioned at all), was what was frequently – and usually cryptically – reported as ‘Soviet military theoreticians’ over the last 70 years. In addition, it was the only equipment-procurement authority in the armed forces of the USSR.

From the point of view of the GenStab’s officers, high-flying strategic bombers armed with nuclear weapons – as operated in hundreds and then thousands by the USA and Great Britain – represented the ultimate threat for the USSR in the 1950s. Unsurprisingly, development of the means to counter this threat were assigned absolute priority. At the end of the Second World War, the Soviets had no comprehensive air defence organisation, very few early warning radars, and only a rudimentary fighter control organisation operating along their western front. Even as of 1958-1959, high-flying US and British reconnaissance aircraft proved capable of penetrating the Soviet airspace at will and reaching any urban centre from Murmansk to Odessa in the knowledge that they were unlikely to encounter any serious opposition. The most effective interceptor aircraft deployed by the Soviet Air Force at the time were the same as already operated by the UARAF: MiG-15s and MiG-17s, followed by the slightly faster MiG-19. Although produced in large numbers, and custom-tailored for intercepting bombers like the Boeing B-29 Superfortress from the Second World War, only the MiG-19 presented a modest threat against the latest jet-powered bombers, like the Boeing B-47 Stratojet, the English Electric Canberra, or Vickers 667 Valiant. In 1950, the Soviets thus initiated work on bolstering their air defences. Due to the lack of the necessary know-how and technologies, this took years to realise. The first major development was the S-25 Berkut (ASCC/NATO-codename ‘SA-1 Guild’) surface-to-air missile (SAM) system: it was a massive, costly, and complex system, essentially obsolete by the time it entered service, and fielded only for the air defence of Moscow. Correspondingly, the GenStab ordered the development of a more economical and flexible weapon: the solution was found in the form of the S-75 Volga (ASCC/NATO-codename ‘SA-2 Guideline’) SAM that proved so promising that it was rushed into mass production even before officially accepted for service. In May 1960, the S-75 was used to shoot down a Lockheed U-2 reconnaissance aircraft operated by



The MiG-19S – a total of 56 of which were acquired by the UAR (though never by Syria) from 1959 – was the first of a new generation of Soviet-designed and manufactured interceptors optimised for high-altitude and fast operations. The type was initially operated by Nos. 27 and 29 Squadrons, UARAF for the first few years, and this scan from *The Armed Forces Magazine*, shows four examples. (Jens Heidel Collection)

the Central Intelligence Agency (CIA) at an altitude of 20,000m (65,617ft) over Sverdlovsk, and only a year later a total of 435 firing units (so-called ‘SAM-sites’ or ‘SAM-batteries’) were in service with the Soviet Air Defence Force (*Vôyska Protivovozdushnoy Obornyy, V-PVO*) with additional similar systems in development. Ultimately, multi-layered ground-based air defences became the core pillar of the Soviet strategy of competing with the technologically superior West and its dominance in the air.

Parallel to SAMs, the GenStab also ordered the development of an entirely new generation of fighter jets. All were expected to become capable of reaching speeds of up to Mach 1.5-2, and operational altitudes higher than 20,000m, even if originally only armed with 30mm guns and a simple radar-ranging sight. The re-established Sukhoi Design Bureau (Sukhoi OKB) was working on two interceptor designs based on the big and powerful Lyul’ka AL-7F engine: one with swept wing, and another with delta wing, the first of which flew in September 1955. Including many entirely new features and technologies, their subsequent development advanced very slowly, and it was only in 1959 that the first swept wing Su-7s and delta-winged Su-9s entered operational service with the V-PVO. Meanwhile, the well-established Mikoyan i Gurevich Design Bureau followed in fashion with similar but much smaller and more agile designs, which eventually led to the aerodynamic shape of the delta-winged MiG-21, powered by the Tumansky R-11F-300 engine. First flown in January 1956, this entered production in 1959.

However, fielding SAMs and manned interceptors was far from enough: indeed, controlling a massive force including thousands of MiGs, Sukhois, and hundreds of S-75 SAM-sites was an art of its own, requiring a complex, multi-layered command and control system, capable of receiving input from ground-based early warning radars, communications- and signals-intelligence gathering stations (COMINT and SIGINT, respectively), and visual observation posts. Efficient operation of all these elements required their tight networking and subordination to one, centralised command node. The result of the related research and development was the first Soviet integrated air defence system (IADS). The first IADS in the USSR were created with the help of tactical management systems like Krab and ASURK-1, which integrated the work of multiple SAM-units. They were followed by the emergence of the first computer-supported, ‘automated’ tactical management system (ATMS) for coordinated operations of manned interceptors and SAM-sites: Vozdukh-1.

A GERMAN TRUMP CARD?

At least from the Egyptian point of view, there was an additional reason for the Soviet leadership being so forthcoming with arms deliveries: this was due to Moscow's eagerness to prevent the development of an aviation industry in the UAR in order to maintain the country's continuous dependence on arms supplies from the USSR.⁸

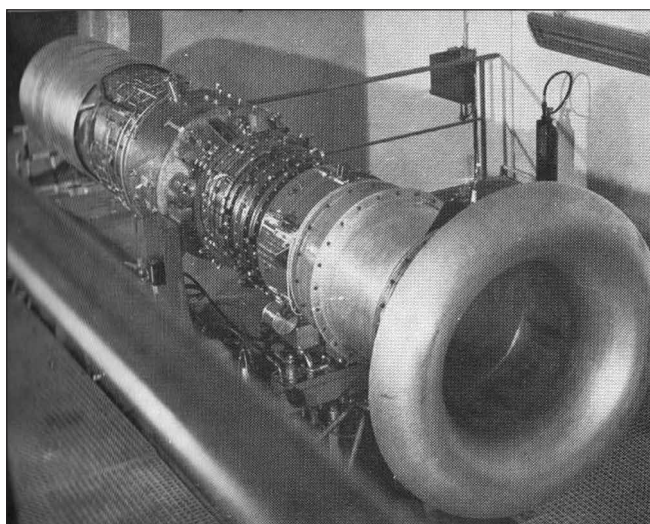
The origins of the Egyptian aircraft industry can be traced back to the 1930s, when several British and German aircraft manufactured for the Egyptian and Iraqi air forces were assembled in local workshops. In 1949, the Egyptian Aviation Factory in Helwan launched the series production of training aircraft based on the design of the Bücker Bü.181D Bestman, and a year later Cairo obtained the licence and machinery necessary for construction of de Havilland Vampire fighter jets: while over 400 Bü.181s were eventually produced over the following decades, one of countless British arms embargoes prevented the realisation of the plan for production of the Vampires.

In 1952, only weeks after the revolution that toppled the monarchy, the new government in Cairo launched an effort to recruit German experts, left jobless after the Second World War, to design a fighter jet that would be produced in series in Egypt. By the end of the same year, the famous Professor Ernst Heinkel was contracted: however, due to differences between him and the Egyptians, and despite an investment of GB£1.515 million, cooperation ended fruitlessly in 1954. Five years later, Cairo purchased the licence for production of the Hispano Aviacion HA-200 Saetta, an aircraft designed by the famous Professor Willy Messerschmitt. After Factory 72 in Helwan had been re-tooled, it rolled out the first 10 HA-200Bs – nick-named *al-Kahira* ('Cairo', but also 'Conqueror' in Arabic) by early 1960.⁹

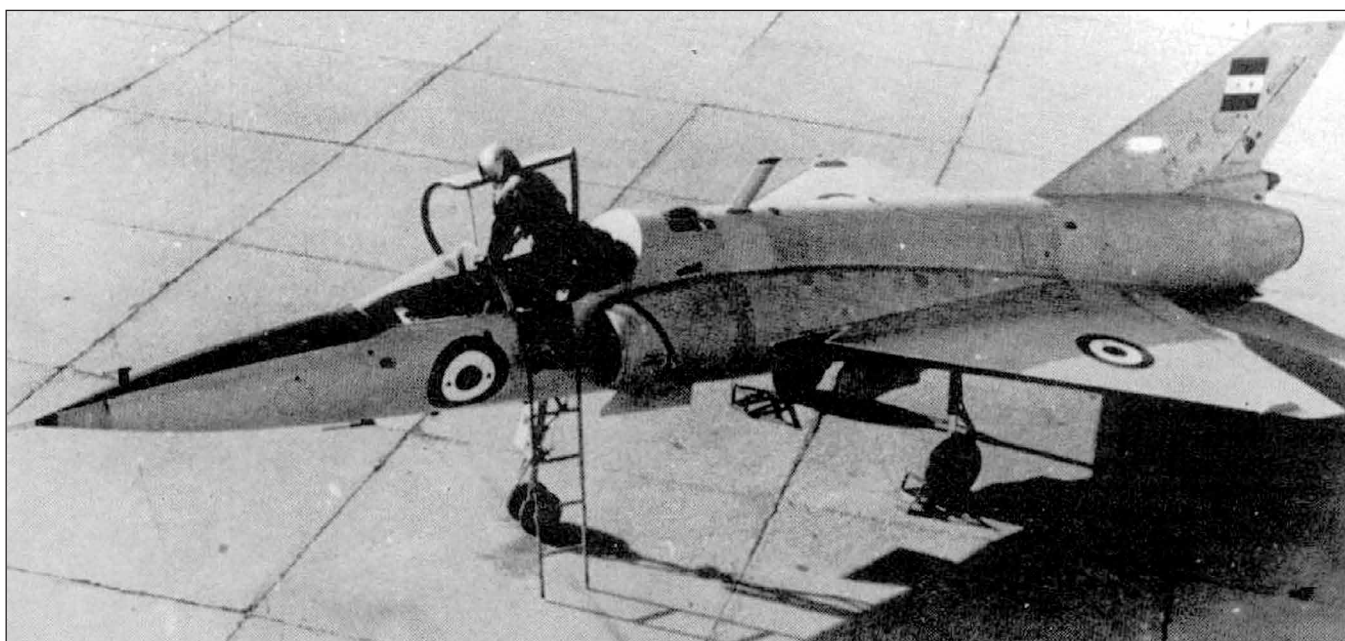
MESSERSCHMITTS OVER THE NILE

In the course of negotiations for this deal, the Egyptians were informed about the full extent of Messerschmitt's cooperation with the Spaniards: this included the development of a Mach 1

capable lightweight fighter. Correspondingly, President Nasser convinced Messerschmitt to transfer this project, lock, stock, and barrel to Factory 35 in Helwan. By the time the German team settled down in the UAR, in 1959, the original design of the fin- and tailless delta, designated HA-23P, was reconfigured into a tailed delta, expected to provide an unbeatable combination of structural weight, wave drag and profile drag, and the project was re-designated as HA-300. The next major issue was finding a suitable engine. Originally, Messerschmitt intended to power the aircraft with Bristol Orpheus BOr.12 engines. However, that project was cancelled in 1959 and the British demanded high, up-front payments to re-launch their work. Correspondingly, he contacted Professor Ferdinand Brandner in Austria, a veteran engineer that worked for Junkers-Motorenbau during the Second World War. Fresh back from years of captivity in the



Brandner's diminutive E-300 engine packed a great deal of power. This photograph shows it undergoing testing at Factory 135 in Helwan. At the time, this was the only facility of its kind in the Middle East. (Courtesy Prof. Ferdinand Brandner)



At 4,490kg (9,899lb) gross weight, and an overall length of only 12.3m (40.7ft), the HA-300 was lighter and smaller than even the diminutive Fowland Gnat – the smallest fighter jet to ever enter operational service. (Tom Cooper Collection)

USSR – where he, amongst others, helped design and develop the Ivchenko AI-20L turboprop engine for the An-12 transport, and the giant and most powerful turboprop engine ever, the Kuznetsov NK-12, installed in the Tupolev Tu-95 bomber – Brandner accepted and moved to the UAR in 1960 to launch the work on a suitable lightweight turbojet, designated E-200.¹⁰

By that time, over 150 Austrian and German engineers were working under contract to a company named MTP, based in Zürich, and run by the Egyptian businessman Hassan Sayed Kamil: MTP was responsible not only for contracting foreign experts, but also for importing over 500 high-quality machines and other tools necessary for Factories 35 and 72, and the newly-constructed Factory 135, where research, design and testing of the E-200 was to take place. By 1962, over 350 foreign and Egyptian engineers were working on the HA-300 and related projects, and the E-200 entered its testing phase. Indeed, most of the development work on the engine was completed by the time Nasser visited Factory 135 in July 1963.¹¹

Just then, the Egyptians increased the requirement for the top speed to Mach 2, and then to Mach 2.5. Brandner's team re-designed the E-200 into the much more powerful E-300, eight prototypes of which were successfully tested for more than 2,000 hours in 1964-1965, while the ninth prototype was installed on a specially modified An-12 for flight testing. However, in the meantime the entire project succumbed to the pressure from Sidqi Mahmoud and other members of the 'pro-Soviet clique' in the UARAF, who were systematically spreading unsubstantiated rumours about corruption, delays and overspending until the HA-300 fell out of favour in Cairo. Although the HA-300V1 – the first prototype of the small jet, still

designed to the original requirement for the maximum speed of Mach 1 – was successfully test-flown for the first time by the Indian test-pilot Kapil Barghabva on 7 March 1965, further work proceeded extremely slowly due to reduced funding. The second prototype joined the flight-test programme only in 1966, but soon showed the necessity for various modifications if it was ever to reach at least the speed of Mach 2.2. Only the first of the last two prototypes – HA-300V3 and HA-300V4, the first examples to be powered by the E-300 engine – was ever test-flown, by Indian test-pilot Mohan Chopra, on 29 March 1967. Less than three months later, the entire project was silently cancelled in the aftermath of the June 1967 War. Egypt (together with India, which became interested in the E-300 engine as a powerplant for the Kurt Tank-designed Hindustan Aeronautics HF-24) thus missed the unique opportunity of not only joining the exclusive club of manufacturers of supersonic jets, but especially the one of manufacturers of suitable engines – with dramatic consequences for the aerospace industry in both countries, and that for decades, if not a full century to come.



One of two HA-300 prototypes passing in front of the An-12B that was specially modified by Brandner and his team to serve as a test-rig for the E-300 engine. (Group Captain Kapil Barghabva Collection, via Tom Cooper)



The slightly larger HA-300V3 was the first example planned to receive the E-300 turbojet – the very engine designed to power the type. It received a slightly longer and larger nose, supersonic intakes based on the design of those of the Lockheed F-104 Starfighter, the longer rear fuselage, and a bigger fin. Still, overall, it remained a small aircraft, and installation of any kind of operational equipment or armament would have proved a major obstacle in its further development process. (Nour Bardai Collection)

The core of the Vozdukh-1 was two computers: one for tracking airborne targets, and the other for calculating interceptor vectors.³ With help of the Lasour datalink protocol – which facilitated communication between the ground control (GC) and the aircraft – the Vozdukh-1 processed all the available targeting data to enable the computation of an optimal flight path for the Sukhoi Su-9 interceptor. Its success eventually led to the idea to also equip the MiG-21 with similar equipment.⁴

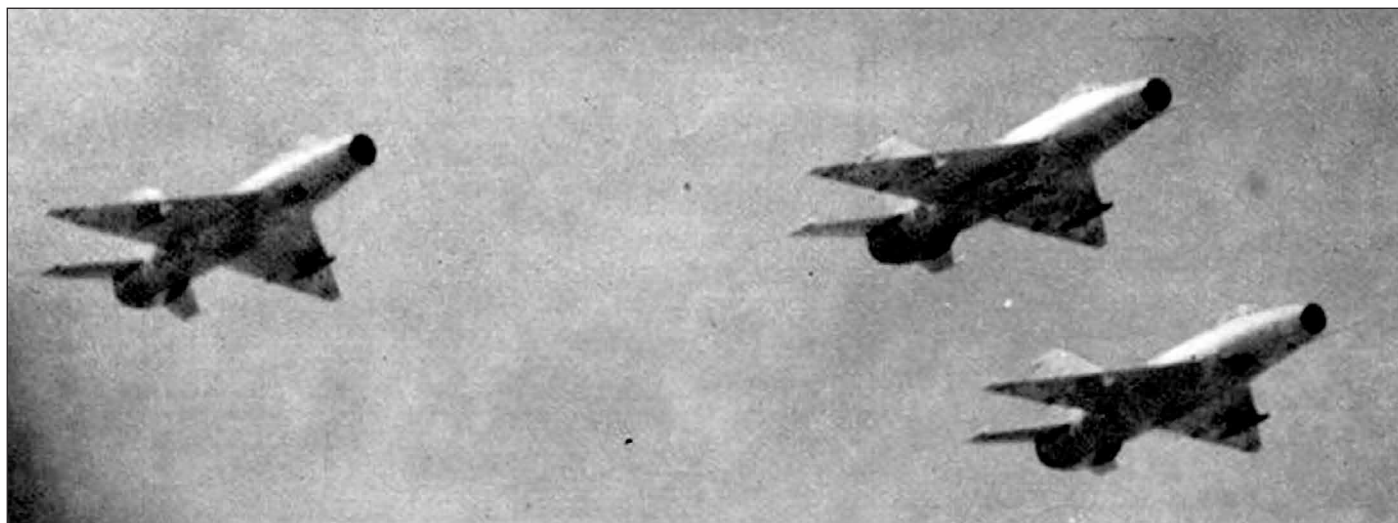
JUNE 1961 ARMS DEAL

On return to Cairo, Riyadh was advanced in rank and appointed Advisor for Air Defence to the High Command of the UAR Armed Forces. Under the influence of the latest developments in the discipline of air defence in the USSR, he began demanding – amongst others – the construction of an IADS covering all the countries neighbouring Israel, the construction of dozens of additional air bases to disperse available combat aircraft, the construction of hardened aircraft shelters, and the construction of a command and control structure capable of coordinating the operations by multiple air forces. Riyadh expected that the air power developed and deployed this way could spoil, or at least make difficult, any sudden Israeli attempt at knocking out Arab air forces, while enabling the conduct of a concentrated offensive against the IDF/AF. Curiously, his demands found support of Sidqi Mahmoud – even if for different reasons – the Air Chief was as short on advanced military education as Nasser and Amer were, but he was one of very few outspoken proponents in Cairo of cooperation with the USSR. This is how Riyadh's ideas eventually found their way to Nasser.⁵

Even if the government in Cairo was in full agreement and keen to follow Riyadh's advice to the last dot and comma – it could not. The reason was as related to the economic condition of the UAR as it was to its relations with the USSR. At the time it was involved in financing the construction of the Nile High Dam near Aswan, and an industrialisation of the economy, Cairo could not afford financing the construction of an as-massive air defence system too. The nationalisation of the Suez Canal in 1956 – the very act that prompted such an uproar in the West and then the tripartite aggression against Egypt – was motivated by the requirement to finance the construction of the huge Nile High Dam: the crucial waterway was relatively quickly returned to operation after the war and functioned flawlessly over the following years. However,

it was not only costly to maintain but required a major expansion to enable the passage of the newest ship-classes, which were continuously growing in size, in turn threatening the make the Suez Canal surplus. Foremost, the waterway did not earn enough to finance everything Egypt needed – and even if it could, it would not result in an instant emergence of the Nile High Dam and all the other industrialisation projects. On the contrary, the construction of the latter was actually launched only on 9 January 1960 and was expected to last for about a dozen years longer. In the meantime, Cairo was busy working up domestic industry to improve the living standards of its population. At least 115 new factories had been opened, hundreds of deep wells drilled and large-scale irrigation projects launched in the course of efforts to industrialise the country and reclaim land. Combined with the severe draught in Syria of 1959-1960, this left the UAR heavily indebted and short of food for its population. Nasser's solution was to continue borrowing money from abroad. In turn, this enabled him, when the time came to initiate negotiations for the next bi-annual arms deal with Moscow in 1961, to confront the Soviets with a hefty list of demands – including the provision of equipment for an IADS that would protect Cairo, Alexandria, and the Canal Zone, 30 SAM-sites equipped with S-75 systems, and no fewer than 150 MiG-21 interceptors. Atop of this, Nasser wanted 24 Antonov An-12 transports, and – as a matter of prestige, and apparently without consulting anybody within the UARAF, but to counter the similar Iraqi acquisition – 24 Tu-16 bombers.⁶

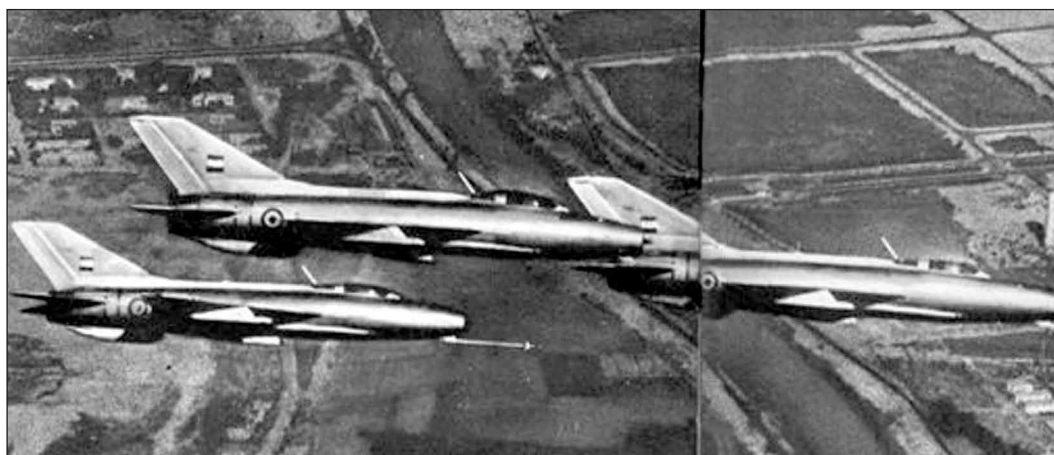
Although disappointed by the failure to establish itself in position of influence in Cairo, and by Nasser's intensified persecution of leftists in Egypt and Syria, the Soviet leadership was eager to retain good relations and pragmatic enough to answer positively. Therefore, the Politburo agreed to provide almost everything the Egyptians demanded and at favourable terms, including cheap loans, payments stretched over more than a decade and partially provided in surplus Egyptian agricultural produce (mainly cotton). The number of MiG-21s that the Soviets could provide was limited to 48, and their delivery, and the deliveries of S-75 SAMs, were stretched over several years – simply because even the Soviets took years to manufacture them, and both weapon systems were in much demand at home and elsewhere. The related contracts with a total worth of US\$170 million were all signed by the end of June 1961.⁷



One of the earliest photographs of MiG-21F-13s, showing a trio approaching Cairo at (unusually) low-altitude, during the military parade staged in July 1962. Notable is the application of the traditional three black 'identification stripes' around their wing-tips. (Nour Bardai Collection)



An elevated view of a quartet of MiG-21F-13s seen while passing the outskirts of Cairo during the same military parade. (Nour Bardai Collection)



Another view of the same formation. While serial numbers were all deleted by the military censor, the identification stripes and underwing hardpoints with launch rails for R-3S missiles are clear to be seen. Also notable is the single 30mm cannon installed low under the right fuselage of each jet. (Nour Bardai Collection)

BACK FROM THE USSR, BACK TO THE USSR

The massive order for MiG-21s and Tu-16s caught the UARAF wrong-footed: not only had much of the air force personnel only recently completed its conversion and tactical training on MiG-17s, MiG-19s, Il-14s, and Il-28s acquired in 1955-1959, but the June 1961 Arms Deal with the USSR was signed shortly before the coup in Damascus that ended the UAR. At least until the end of the same year, the air force was busy sorting out Syrians that wanted to return to their country, returning their own personnel from Syria, and then re-organising numerous of its units. Many of about 40 pilots and ground personnel selected to fly the first Egyptian MiG-21s had only recently returned from conversion training for MiG-19s. Among them was Major Adil Nassr, who later became the first UARAF pilot to qualify for nocturnal operations of radar-equipped supersonic fighters, and was then appointed as the commanding officer (CO) No. 40 Squadron in 1966; Fuad Kamal, fresh from flying MiG-17Fs with the Aerobatic Team; Farouq el-Ghazzawy, who proved his expertise on MiG-17Fs when downing the *Mystère IVA* flown by the future commander of the IDF/AF, David Ivry, in 1959; but also Major Ala'a el-Din Barakat, who had just concluded working up newly established Nos. 27 and 29 Squadrons on the MiG-19S. Nevertheless, the air force was in such a rush to obtain a replacement for the unreliable MiG-19, that it was ready to strip down its operational units of

experienced commanders and pilots. The Soviets proved forthcoming in regards of training the Egyptians: instead of organising the usual, six-month conversion course at the Frunze Military Aviation School (renamed the 5th Training Centre in 1959), they rushed them through a much-shortened, 'conversion course of experienced pilots', organised at Sevastleyka, and lasting only six weeks. That said, about 870 Egyptian military trainees were sent to the USSR for training in 1961, and in general, the quality and nature of the lectures they received experienced a fundamental change: while during the second half of the 1950s, they would undergo relatively short courses designed to familiarise them with the Soviet equipment, henceforth they received more comprehensive training for more sophisticated weapons, which lasted longer than six months – offering the Soviets plenty of time and valuable opportunities for indoctrination – especially as the mass of Egyptian field-grade officers meanwhile in service had had little or no

contact with Western military methods.¹²

The first batch of MiG-21F-13s was delivered by ship to Alexandria, dismantled and packed in transport containers in late November 1961. Led by Colonel V. E. Slugin, they then travelled to Cairo West AB, to help assemble and test-fly the new jets. Much to the dismay of the UARAF, nothing similar was possible in regards of the Tu-16s and An-12s as both of these aircraft were much too large for the usual delivery by ship. Top Egyptian bomber-pilots were either undergoing staff courses in the USSR, or preoccupied training additional Il-28 crews, and thus the air force could not immediately convert any to the new types: this was a late consequence of the British refusal to deliver multi-engine aircraft in the early 1950s, as described in Volume 1. Certainly enough, the Egyptians did try: correspondingly, four of their most experienced multi-engine pilots – Hosni Mubarak, Kamal Darwish, Usama Mumahmmed Sidqi, and Fawzy Shaban – and six navigators, gunners, and ground crewmen were sent for a four-month conversion course for Tu-16s at Ryazan AB in the USSR. However, when the time for delivery came, there was no other solution but to fly the first 12 Tu-16s to Cairo West – via Hungary, Yugoslavia, and Greece, on 6 November 1961 – using the crews of the 244th Bomber Aviation Regiment of the 56th Bereslavskoy Aviation Division (Soviet Bomber Aviation). Indeed, these crews then continued serving in Egypt for several years longer. The same

was valid for the first six An-12s that followed closely – all flown by crews drawn from the 12th Guards Military Transport Aviation Division of the Soviet Transport Aviation – and for those of the second batch of 15 Tu-16s, delivered to Egypt in summer 1962, followed by six additional An-12s.¹³

IZDELIYE-74

The Egyptian experiences of introducing to service the new MiG-21 proved very similar to that of introducing MiG-15s to service back in 1955-1956. The Soviets were quick to deliver and the first batch of MiG-21F-13s (designated the 'Izdeliye-74' – or Model 74 by the manufacturer) arrived by ship in Alexandria, dismantled and packed in transport containers, in late November 1961. The delivery was accompanied by a team of instructors and technicians led by Colonel V. E. Slugin, which then helped assemble and test-fly the new aircraft at Cairo West AB, the first main hub of UARAF's MiG-21 operations. In late December 1961, the first group of pilots and ground personnel that had trained on the type returned from the USSR, and they were organised into two new units: Nos. 40 and 47 Squadrons of the newly established Air Group 7, home based at Abu Suweir. By that point in time, the conversion was relatively smooth and trouble-free. However, once they had the new MiGs in service, the Egyptians had few ideas about what to do with them: as usual, the Soviets had only provided basic flight training on the type – including little more than courses on its avionics, different systems, and engine, take-offs and landings – but no tactical training at all. Moreover, it not only took the Soviets years longer to manufacture and deliver additional MiG-21s, but also for the UARAF to introduce these to service.¹⁴

Designed as a day fighter, the MiG-21F-13 – or Izdeliye-74 in the terminology of its designer – was the first variant of this type manufactured in large numbers. The suffix of its designation indicated it was an uprated design, equipped with the K-13 weapon system, the centrepiece of which was the R-3S infrared homing air-to-air missile (ASCC/NATO-codename 'AA-2 Atoll'). The essence of the MiG-21's design was the drive for speed and maximum operational altitude: in this regard, the type was very straightforward and uncomplicated in terms of handling. The powerful, yet small and slow-to-accelerate (or 'spool up') Tumansky R11 engine was packed into a lightweight, circular fuselage, which otherwise provided very little space for fuel, armament or avionics. The mid-set delta wing provided the lift necessary for high-altitude operations, and was combined with all-moving tailplanes, providing inherently good stability and handling even at high angles of attack.

However, the list of MiG-21F-13's drawbacks was quite long. Except for its SRD-5MK Kvant radar rangefinder, the aircraft had only minimal navigational systems, and the pilot was heavily dependent on support from ground control for effective operations. As such, the MiG-21 was suitable only for operations by day and good weather. While it had a high initial turn rate, its big delta wing acted as an air brake, while the R11 engine was not built for air combat and thus had a very slow throttle response: combined, this meant that the aircraft would rapidly lose energy and speed in turn. Although designed for high-altitude operations (a discipline in which the MiG-designed fighters traditionally excelled), the poor durability of its lightweight construction and the relatively poor manufacturing quality made it anything but ideal for high-speed operations, regardless of at what altitude: for example, the maximum speed at altitudes below 5,000m (16,404ft) was limited

to 945km/h (510 knots). Above that speed at low altitudes, the fuel pumps could not keep up with the engine's requirements and the pilot would experience very heavy longitudinal stick forces, which made the aircraft difficult to control: in extreme cases – and although the jet was stressed for accelerations of up to 6g – it could disintegrate. Moreover, the aircraft carried only the bare minimum of fuel and armament: for the theoreticians of the GenStab, neither mattered much in aerial warfare expected to be fought at high speeds and altitudes, in the form of fleeting engagements, and not far from friendly air bases. But in the UAR, where the type was supposed to serve as a principal fighter interceptor, and fly combat air patrols over friendly ground forces, it meant that the MiG-21F-13 was always short on fuel: maximum endurance at optimal speed and altitude with one 490-litre drop tank under the centreline was about 40 minutes.

The MiG-21F-13 carried an extraordinarily small amount of ammunition, too: the sole 30mm gun had only 60 rounds, barely enough for two short bursts. The gun was complemented by a pair of R-3S missiles: copies of the US-made AIM-9B Sidewinder, one of which was acquired almost intact via the People's Republic of China during the Taiwan Crisis of 1958. Like the US original, this weapon was relatively slow and had an effective maximum range of only 1,500m (1,640 yards) at altitudes between 2,000 and 12,000m (6,562-39,370ft), or 3,500m (3,828 yards) at higher altitudes. It could only be fired from an aircraft pulling no more than 2gs, and its seeker head could only track targets pulling up to 2.3gs – which meant that it was entirely unsuitable for aerial combat against manoeuvring targets. Moreover, the R-3S was next to useless at altitudes below 550m (1,804ft), where the heat mirrored by the ground was near certain to distract its seeker head from the actual target. The final problem with the MiG-21 was also related to the aircraft's construction: specifically, its thick, armoured plexiglass windshield, which severely hindered the view towards the front: as a consequence, during an attack, pilots were advised to conduct the visual search for their target through the unarmoured portion of the side canopy instead, until the range was down to 2,000-3,000 metres.¹⁵

POINT DEFENCE INTERCEPTOR

The Egyptians received the new type enthusiastically: although having a very high landing speed, the MiG-21F-13 was relatively easy to handle, a true joy to fly, fast but still manoeuvrable at medium- and high altitudes. After gaining more experience on it, some pilots were delighted to put it through its paces: several discovered that it could be pushed to speeds beyond Mach 2.2 and flown at altitudes up to 21,500m (65,500ft) – i.e. beyond its nominal flight envelope – even though manoeuvring under such circumstances was tricky and could result not only in a spin or engine stall, but outright disintegration of the aircraft. In the – usually good – Egyptian weather, most of this was no problem. Indeed, even frequent engine failures (finally sorted out only once their origin was discovered by the Yugoslavs in 1964) were less of a problem than in Europe: just one of the youngest early MiG-21 pilots, Ahmed Nour el-Din, is known to have returned three different jets back to base, despite suffering critical engine mishaps that, at least according to the flight manual, were grave enough for the pilot to eject.¹⁶

Even if not providing tactical training to the Egyptians, the Soviets did go as far as to supply their tactical manuals – both to the Iraqi Air Force (IrAF) and the UARAF. Unsurprisingly considering all the above-listed characteristics of the MiG-21,



A line-up of MiG-21F-13s of No. 40 Squadron, seen on 26 October 1964. The nearest aircraft bears the serial number 5006. (David Nicolle Collection)



A front view of the pitot tube, intake, lower fuselage, wings and the two hardpoints (with launch rails for R-3S infra-red homing air-to-air missiles) of an early Egyptian MiG-21F-13. Notable are the three black identification stripes near each wing-tip. The photograph was probably taken at Cairo West AB in 1963 or 1964. (David Nicolle Collection)

these emphasised high-speed operations at high altitudes, while only superficially pointing at – if not completely ignoring – different shortcomings of the type: the latter became evident only years later. The principal textbook for how to fly and fight in the MiG-21F-13 of the early 1960s was the *Manual on the Techniques of Piloting and Military Use of the MiG-21*. More than three quarters of it was devoted to intercept operations at medium or higher altitudes. In turn – and while this manual was full of warnings for the pilot to keep an eye on his speed – it de-facto provided

no instruction for how to fight an air combat: apparently, the Soviets expected the ground control to bring the MiG-21F-13 to within, 'a rocket [missile; authors' note] -range before the target begins to manoeuvre and with only a small angle off the tail'. If, following approach, the fighter was still outside the maximum range for the R-3S, 'the interceptor should continue the approach until the target defensive manoeuvre is noticed'. In cases where the target began manoeuvring prior to the entry of the interceptor into the missile attack zone, the Soviets merely instructed: 'the attack should be executed from the

portion of the rocket-launching zone situated beyond the target'. The only advice for attacks against targets that could manoeuvre at 'almost the same g-loads as the MiG-21F-13', was, 'R-3S rockets should be launched before the g-load reaches maximum value for sighting, if the interceptor can approach the target to a permissible launching range.' Ironically, the same manual contained next to no instructions for how to manoeuvre the MiG-21 during an air combat with a manoeuvring target, and only a bare minimum of instructions for how to avoid an enemy attack: for all practical purposes, the manual expected the pilot to take-off, accelerate, climb to the necessary altitude while flying along a vector provided by the ground control, find a target operating at a medium-, high-, or very high-altitude (the latter was called 'dynamic altitude'), rollout within the missile range, fire one or two R-3S, and return to base. Unavailingly, and although the type was considered as superior in manoeuvrability to all of its potential, Western-made opponents, after converting to the MiG-21F-13, pilots of Nos. 40 and 47 Squadrons spent most of their tactical training flying fast and high, while their commanders insisted on this doctrine so much that they began prohibiting any kind of flying at low altitudes.¹⁷

INADEQUATE GROUND SUPPORT

Obviously, the reason for the Soviet tactical manuals for the MiG-21 emphasising operations at medium or higher altitudes was that the type was developed with such operations in mind – even if its design added such characteristics as good manoeuvrability to it. Unsurprisingly, the ground equipment designed to support operations of the type was custom-tailored for such intercepts at high altitudes. However, Egypt was slow in the acquisition of such equipment, and the Soviets proved less keen to deliver. The radar network of the UARAF as of 1961-1962 was still essentially the same as that established in 1956, and – following withdrawal from service of older systems acquired from France and Great Britain – almost exclusively consisting of Soviet-made P-8 early warning systems (ASCC/NATO-codename 'Knife Rest A'). While having a detection range of about 150 kilometres (81nm), and – thanks to its widespread use and deployment, available in numbers and well-supported by experienced personnel and sufficient stocks of spares – this system was meanwhile showing its age, and anything but suitable to support operations of supersonic fighters. Correspondingly, the Egyptians requested the delivery of the more advanced P-30 Khrustal radar (ASCC/NATO-codename 'Big Mesh') with a range of 180 kilometres (112 miles). However, none of these are known to have been delivered until around 1964: even so, the P-30 was not optimised for low-altitude operations, and even once it did enter service in Egypt, it promptly proved unable to detect targets flying at less than 500 metres (1,640ft) altitude. Unsurprisingly, the *Manual on the Techniques of Piloting and Military Use of the MiG-21* did not envisage low-altitude operations even for so-called barrier combat air patrols (BARCAPs) – the type of operations that should have been expected to become most widespread in the UAR. Specifically, the manual recommended pilots and ground controllers operate their MiG-21F-13s at altitudes either between 1,500 and 2,000m (4,921-6,562ft), or between 7,000 and 8,500m (22,966-27,887ft), some 20km (12 miles) 'behind the frontline' (or border) when flying BARCAPs. Indeed, it recommended the latter altitude because it offered lower fuel consumption, which in turn mean that a jet flying higher could also remain on station for a while longer. Ironically, while providing no other details, the entry about operations against low-flying-targets was concluded

with the observation that such should be undertaken with help of ground controllers with 'sufficient experience': something that was practically impossible considering that nobody could have been trained in this discipline.¹⁸

Consequently, when buying its first MiG-21F-13s, the UARAF thus received an interceptor that was lovely to fly – especially in the usually excellent weather of Egypt – but largely unsuitable for the task at hand; short-ranged and poorly armed; without a clear idea how it should be best operated; and for which it received a mass of entirely useless advice from the manufacturer and seller.

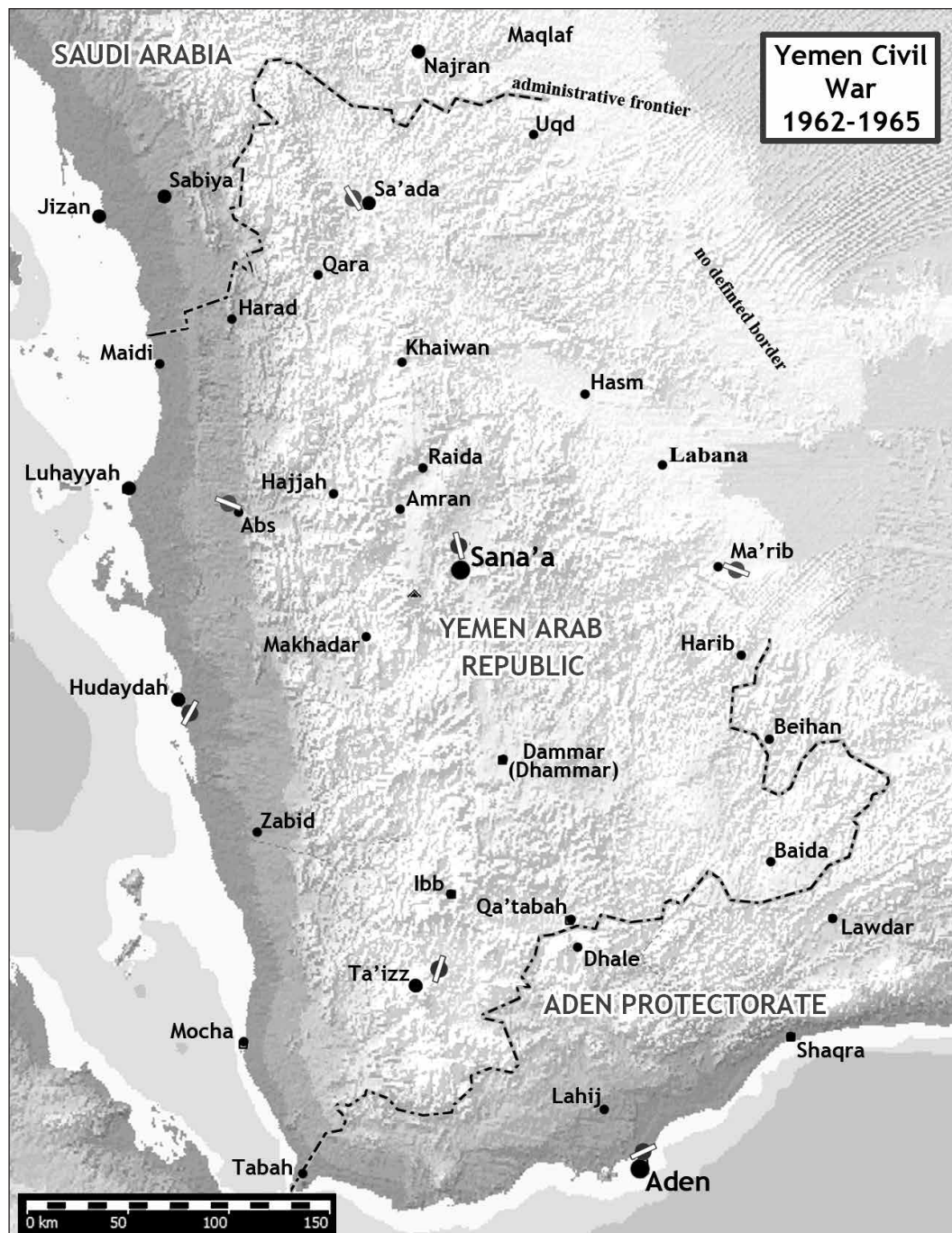
2

ADVENTURES IN YEMEN

The UARAF was still working up its units equipped with MiG-21F-13s and was still some time away from actually operating An-12s and Tu-16s by the time the government of President Nasser embroiled the country into a conflict that was to cost all the involved parties dearly. As described in Volume 1, in March 1958, a third party announced its decision to join the Union of Egypt and Syria: this third party was the Imamate of Yemen. Ironically, while related developments concerning Cairo and Damascus caught almost all the public attention – in the UAR and abroad – the Yemeni decision was almost entirely ignored, even by President Nasser. Certainly enough, it resulted in an Egyptian attempt to affect a complete union as in the case of Syria. However, in the long terms, it had longer-lasting, and far more tragic consequences.¹

THE LAND OF THE QUEEN OF SHEBA

Situated in the south-western corner of the Arabian Peninsula, the civilisation in the area nowadays within frontiers of the Republic of Yemen first flourished thousands of years ago. Judaism, local paganism, and Christianity were largely swept away by the spread of Islam in the 7th century, and Yemenites were highly influential in further expansion of that religion during the medieval age. Being the sole coffee producer in the world, and positioned at a point connecting Africa, Asia, and Europe, Yemen subsequently flourished on trade, the income of which enabled the establishment of a monarchy – the *Mutawakkilite*, or Imamate of Yemen – monarchies reigned by *Imams*: priest-kings. Exploiting a period when the country was in a state of anarchy caused by the failure to find a cohesive mechanism for succession, the Ottomans conquered large parts of the coast in 1538. While they failed to secure the highlands, and then found themselves facing a major Yemeni counteroffensive that secured all of Yemen from Asir in the north to Dhofar in the south-east, the Ottomans managed to retain their presence until 1918. Meanwhile, the Imamate nearly disintegrated, lost the monopoly on the coffee and then found itself in competition with the Omani Empire and Western imperialism: unsurprisingly, it was ill-positioned to counter the British occupation of Aden in 1837, and its subsequent development into the most important base on the route connecting the Suez Canal and India. Certainly enough, the Imamate of Yemen was amongst the first Arab countries to establish modern-day armed forces, around a core of about 300 Ottoman officers and non-commissioned officers (NCOs) in 1918, but sovereignty and independence of the country remained shaky – to a degree where the Emir of Assir, the country's richest province, assented to Saudi suzerainty in 1923, and Yemen then



A map of the Yemen Arab Republic as of 1962-1965, showing all airports regularly used by the UARAF. Notably: Hudaydah AB and the new Sana'a Rawdah, were constructed by the Egyptians in late 1962 and early 1963. (Map by Tom Cooper)

lost two related wars against the British-supported forces of Ibn Saud, King of the Nejd and the founder of Saudi Arabia, fought in 1930 and 1934. Unsurprisingly, for the next 20 years, Imam Yahya concentrated on consolidating his authority over what was left of the Imamate, gradually converting it into one of the most isolated countries in the world.

As of the late 1950s, the population of the Imamate of Yemen was estimated at between 4.2 and 5 million, with most ethnic groups being Arab, but also some Afro-Arabs, South Asians, and Europeans, dominated by the two Islamic sects, the Sunni (locally designated as the Shafi) and the Shi'a (principally Zaidi, but with significant minorities of Twelvers and Ismailis). The Zaidis dominated the central and northern highlands, with Sa'ada as their centre; Ismailis the Haraz region west of Sana'a, and the area along the border with Saudi Arabia. However, neither the

Shafi nor the Shi'a showed the zealotry of modern-day Iranian Shiism, or the dour puritanism of the Wahhabis of Saudi Arabia: on the contrary, there was very little distinction between the two sects, intermarriages were common, and everybody worshipped in each other's mosques. The centrepiece of local society was the tribes: together with tribalism and related ties, they permeated everyday life. The majority of the of thousands of tribes were organised into two tribal confederations: the tightly united Hashd, and the less-coherent Bakil. Where there were differences was within the establishment of the society: especially the more sophisticated and better-educated Shafi merchants resented the political domination of the more warlike Zaidis, and this issue was to cause the mass of troubles that has befallen the country since the 1950s.

In 1948, Sayf-ul-Islam Ahmad Ibn Yahya Hamidaddin took over (in place of his father, Imam Yahya, founder of the modern-day Imamate, assassinated by a member of the Hashd tribal confederation). While slightly more receptive to foreign contact, Imam Ahmad quickly proved an ultra-conservative ruler who never allowed his country a free intercourse with other nations. Unsurprisingly considering his deep antipathies towards

Great Britain in particular, he intensified the supply of arms for allied tribesmen in Baida, Qa'tabah, and Harib that were fighting the British and, in 1955, signed a mutual defence treaty with Cairo, under which his armed forces were – at least nominally – put under the Egyptian control. By this time, representatives from Sana'a were also in contact with Prague and thus Yemen became only the third Arab country (after Syria and Egypt) to start purchasing arms from the communist-dominated countries in Eastern Europe. Finally, in March 1958, Yemen – meanwhile neck-deep in what was an almost all-out war against the British in Aden – officially joined Egypt and Syria.

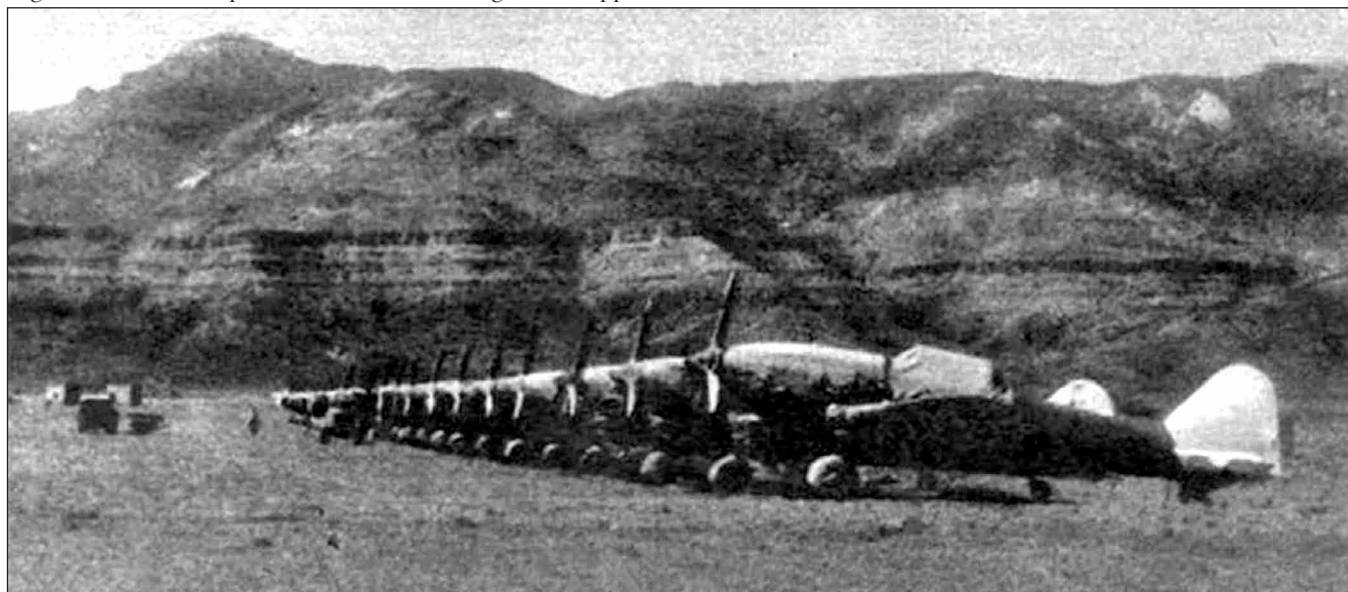
NEW TIMES IN OLD SANA'A

Motivated by the realisation that his rule was increasingly unpopular at home and he was facing widespread dissent within the ranks of

YEMENI AVIAS

Although ruled by a conservative Islamist government that kept it isolated from the outside world, the Imamate of Yemen became only the third Arab country to purchase combat aircraft from the Eastern Bloc: indeed, if it was not for its poor financial situation it might have competed with Egypt and Syria for first place in this discipline. Following several months of negotiations, made problematic by poor communications with Sana'a and uncertainties over its ability to pay, on 11 July 1956 a contract was signed for the acquisition of tanks, armoured personnel carriers, rifles, ammunition – and 24 piston-engined Avia B.33 attack aircraft (Czechoslovak-manufactured Ilyushin Il-10s), together with their spares, ammunition, and ground support.

Although reluctant, the Czechoslovaks acted correspondingly, and 20 B.33s and four CB.33 conversion trainers were delivered by ship to Hodeida on 18 May 1957. Due to complete lack of tools, suitable bases, and Yemeni personnel, their assembly advanced very slowly, and – even though the Soviets reinforced the Czechoslovak team of 28 responsible for working up the aircraft with 12 of their own specialists in September 1957 – by 13 December of the same year only nine B.33s and two CB.33s had been assembled. Available photographs indicate that up to half a dozen additional Avias had been assembled over the following months, there is no evidence that any of them had ever been flown.



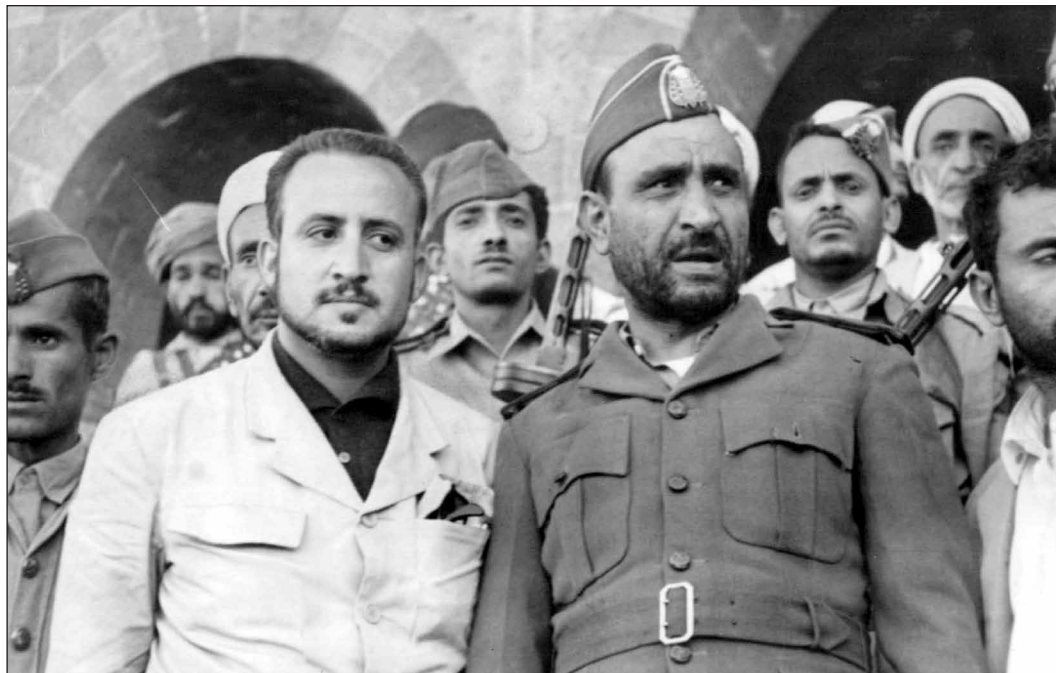
A row of Avia B.33s (essentially a Czechoslovak-manufactured Ilyushin Il-10 attack aircraft), 'stored' at Sana'a (South) Airfield in 1959 or 1960. (Pit Weinert Collection)

his armed forces, Imam Ahmad's decision to join the UAR was actually not worth the paper on which it was printed: for most of the next two years Nasser and his government were preoccupied with integration of Syria into the UAR and continuous clashes with Israel, and thus found little time to care about development in Sana'a, the Yemeni capital. However, by 1960, dissent within the local armed forces reached a point where Imam Ahmad was forced into a major reorganisation: amongst others, he appointed Colonel Muhammad Abd al-Qaliq Hajar – educated at the Military Academy in Baghdad, and the Staff College in Cairo – as Chief-of-Staff of the army, and reorganised different units of the army. The Soviets helped establish the Pilots and Parachutists School, in 1960, and a year later expanded this into the Aviation College. Combined with the construction of rudimentary airports in Hudaydah (also 'Hodeida') and Ta'izz (also 'Taiz'), by 1961 this led to the creation of an 'Air Force and Meteorological Service', equipped with a few Soviet-made Yakovlev Yak-11s, 10 Czechoslovak-made Zlin Z-126, one Ilyushin Il-14, two Mil Mi-1 and four Mi-4 helicopters, most of which were donated by the USSR, and at least one North American T-6 Texan donated by Saudi Arabia. The nascent air force was commanded by Brigadier-General Ghalib Ibn Ahmad al-Jarmuzi, who also served as the Director of the Yemeni Airways Company but remained heavily

dependent on support of a team of Soviet pilots and ground crews, and had only four of its officers trained in the USSR in 1960-1961.²

The reforms of the armed forces from 1960-1961 proved the proverbial 'too little, too late', because by this time no fewer than four different groups within the armed forces were plotting against the Imam's reign: at least two of these were supported by Cairo where, in the light of the recent setback in Syria, there was a growing interest in removing Imam Ahmed and gaining a firm foothold on the Arabian Peninsula.

Ironically, Imam Ahmad survived long enough to die in his sleep on 19 September 1962. A day later, the religious teachers of the realm met at the great mosque of Sana'a to elect Prince Muhammad al-Badr as the 66th Imam of Yemen. In turn, Badr called a cabinet meeting in the Bash'ir Palace for the evening of 26 September 1962. This was the moment selected by two of the Egyptian-supported groups to move: plotters led by Lieutenant Ali Abud ordered the army's sole armoured unit into Sana'a while, entirely independently, Egyptian-trained Brigadier-General Abdullah as-Sallal, commander of the Royal Guard, merged his plot with the third conspiracy, linked to the chiefs of the Hashd tribal confederation: his forces surrounded the Bash'ir Palace and then subjected it to withering fire from light artillery pieces, mortars, and machine guns. Before long, Imam Badr was proclaimed dead, and the country – now governed by the Revolutionary Council,



Brigadier-General Abdullah as-Sallal (foreground, right), former commander of the Royal Guard, who established himself in power in Sana'a during the coup of 26 September 1962. (Albert Grandolini Collection)

presided by Sallal – was declared the Yemen Arab Republic (YAR). Enthusiastic about the coup in Sana'a, Nasser was quick in sending the aide Anwar el-Sadat to the YAR: Sadat returned to Cairo on 29 October, to deliver an even more enthusiastic report, including recommendation for the deployment of at least a squadron of UARAF fighter-bombers, to help protect the new republic against a possible Saudi intervention. Only a day later, the President of Egypt – keen to provide moral and material support – granted permission for the deployment of two battalions of special forces, and the provision of supplies, in addition to one UARAF unit.

AMER'S VISIT

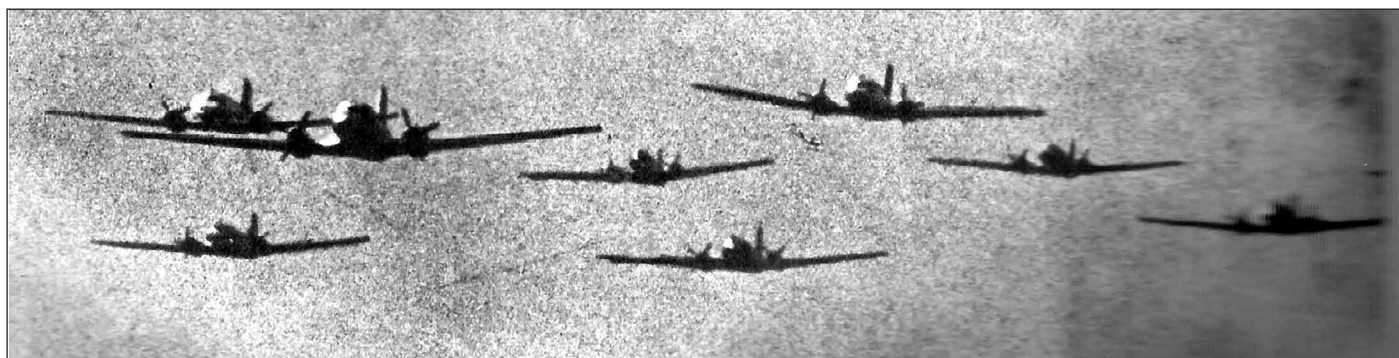
The first two An-12s – both operated by crews of the 12th Guards Military Transport Aviation Division wearing UARAF markings and nominally assigned to No. 14 Squadron of the Air Group 32, UARAF – delivered a cargo of 43 barrels of kerosene (necessary for their flight back to Egypt), several tonnes of ammunition, a civilian delegation, and a platoon of paratroopers from the 77th Parachute Battalion of the Egyptian Army to Sana'a on 28 September. Two further pairs of An-12s followed up with a similar cargo to Sana'a and Ta'izz on the next day. On 1 October 1962, nobody less than Field Marshal Hakim Amer, Minister of War of Egypt arrived with one of the Soviet transports in Egyptian markings in Yemen. With him was Major-General Abdel Khabir, and a full company of

Saikas (Egyptian commandos). Because Moscow insisted on keeping its involvement secret, Soviet pilots were strictly prohibited from speaking Russian on the radio whenever flying anywhere east of Aswan, even if doing so only by night. Every aircraft carried an interpreter in the event that radio communications might become necessary. The Soviets were to continue operating all the An-12s on this 'line' for nearly two years longer.³

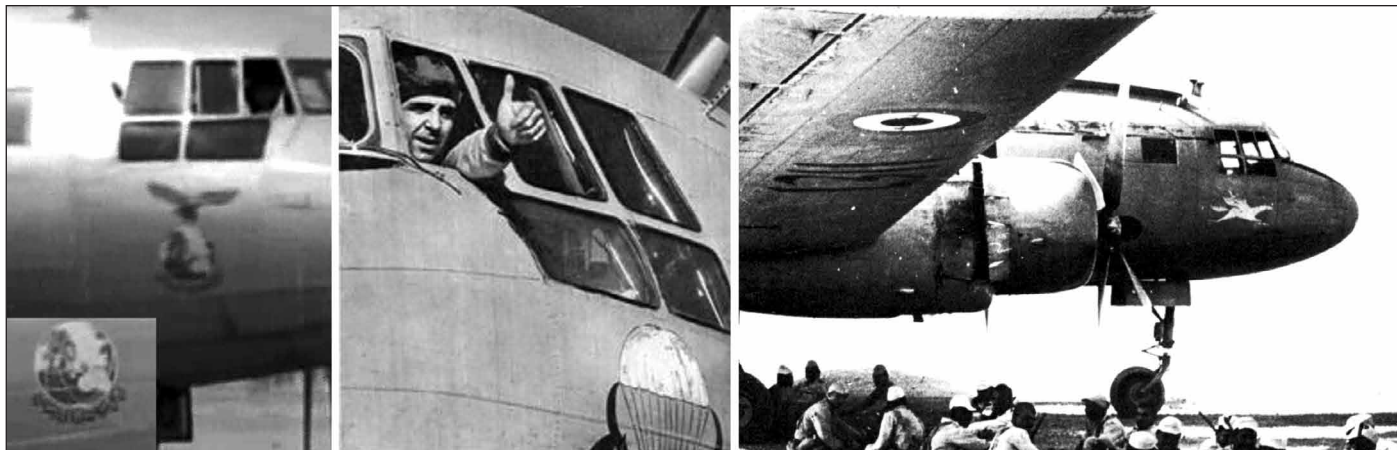
Immediately after his arrival, Amer met the members of the Revolutionary Council. As presented to him, the situation was favourable – foremost because the tribes from southern and western Yemen, and the armed forces, were supportive of the new

government, even if – at least according to Egyptian reports – the Yemeni Air Force was 'all but dysfunctional'. Emboldened to hear that the majority of Yemenis sided with the Republican government, Amer then negotiated the appointment of Major-General Abed al-Menahim Khalil as Chief-of-Staff of the joint Egyptian-Yemeni armed forces, while Khabir was appointed liaison officer to Major-General Sa'adi Najib, Chief-of-Staff Yemeni Army. That said, Amer did not immediately order an expansion of the Egyptian military presence: this was to happen only sometime later during the following two weeks.

Eventually, not only did it turn out that Imam Badr had survived the attack on Bash'ir Palace, but he fled into the rugged mountains of northern Yemen to attract support from several Zaidi tribes. Paid in gold, this support was nowhere near as widespread as reported by the media in Great Britain and the USA at the time – or since: his father's arbitrary autocracy was anything other than popular, and even the majority of the Zaidis sided with the Republican government. However, Badr was determined to re-establish himself in power and not too proud to request support from his archenemies: the Saud family in Riyadh. Facing widespread and continuously growing dissent at home, and harsh criticism from the top Egyptian leadership and the media for years, the Saudis were seriously concerned that they might be toppled by pan-Arabists



A formation of Il-14s of Air Group 32, UARAF seen underway at high-altitude. The type was heavily utilised in support of the Egyptian military intervention in Yemen, where it was not only deployed for transport, but also for airborne assault purposes, and as a makeshift-bomber. (Jens Heidel Collection)



By 1962, the UARAF operated a large fleet of medium transports, including three squadrons of Il-14s, the insignia of which is shown in this collage, from left to right, No. 11 Squadron was a VIP-transport unit (operating also the Il-14 with serial 1101, which carried Nasser and Amer to their international visits); No. 14 Squadron was trained for airborne assault operations, thus had some of its aircraft decorated with insignia including a parachute, and was nominally in control of Soviet-operated An-12s that ran the air-bridge to Yemen. Finally, No. 16 Squadron was a 'pure' transport unit, operating Il-14s until 1964-1965, when it was re-equipped with An-12BPs. (Nour Bardai & Tom Cooper Collections)

within their own armed forces. Correspondingly, they granted Badr the permission to establish a base near Najran, a town in south-western Saudi Arabia, and deployed elements of their armed forces – including transport aircraft of the Royal Saudi Air Force (RSAF), and their Royal Guard – to support him.⁴

Lavish provision of Saudi gold, arms and ammunition enabled Badr to build up a force and attempt a counterstrike. The first column of tribal warriors moved southwards from Najran in early October 1962, with the intention of reaching Sa'ada and instilling an uprising. Shortly after crossing the border, on 5 and 6 October, this column was ambushed by two battalions of the Yemen Army, reinforced by Egyptian commandos and paratroopers, and largely destroyed. A similar fate befell two additional columns dispatched in the same direction by 12 October, by when about 1,500 UAR military personnel were in the country, supported by about a dozen pilots flying available Yemeni aircraft.⁵

However, there were cases where Royalists – or the Saudi gold – were much more successful. For example, when the Bani Matar tribe revolted and besieged the Yemen Army garrison in Hadid, in mid-October 1962, it took a combat jump by Egyptian paratroopers, and 48 hours of intensive combat operations to lift the siege, and the success

Table 1: Air Group 32, UARAF, 1961-1967

Subunit	Base	Aircraft Type	Note
No. 11 Squadron	Bilbeis AB	Il-14	VIP-transport
No. 14 Squadron	Almaza AB	Il-14	nominally included first 7 Soviet-operated An-12BPs
No. 16 Squadron	Cairo IAP	Il-14	converted to An-12BPs in 1963-1965

came only at a heavy loss in life and equipment. Similar happened in Amran – where the paras of the 77th Battalion made a combat jump from Il-14 transports of No. 14 Squadron, UARAF, on 22 October, to lift the siege of the local garrison. In turn, when a brigade of the Yemeni Army reinforced by Saikas attempted to



The first type operated by the UARAF known to have flown combat operations was the Il-28. Taken during one of the annual military parades in Cairo, this photograph shows five jets of Air Group 61, including examples coded as 'E', 'F', 'N', 'D' and 'O' or 'Q'. (David Nicolle Collection)

reach Ma'rib along the road from Sana'a, it ran into an ambush near Ra's al-Aqoob and was almost annihilated.

ENORMOUS ERROR

What happened next was never sufficiently explained by any of the available Egyptian or Yemeni sources. Regardless of how fruitless Badr's attempts at instigating an armed insurgency actually proved to be, Amer reacted with what Field Marshal Mohammed Fawzy later described as, 'the enormous error': a major expansion of the 'limited' Egyptian military contingent in the country. Codenamed Operation 9000, this enterprise was initiated on 15 October, when three brigades of the Egyptian Army were sent to Suez, embarked on merchant ships and then taken to Hodeida, five days later. Meanwhile, Soviet-flown An-12s assigned to No. 14 Squadron, UARAF, launched an air-bridge from Cairo West AB, via Asyut airport, to Sana'a – which they were to maintain for the rest of the year. First, they flew in engineers that expanded the aerodrome south of the Yemeni capital, and then constructed the HQ of the Egyptian Army in the country: the latter was declared operational on 28 October 1962, by when Amer arrived in Sana'a for his second visit. Stunned by the outbreak of violence and heavy losses of the Egyptian and Yemeni armies, he reacted in his – now usual – fashion: he first dismissed, then re-appointed the involved Egyptian commanders, and then ordered them to re-group and launch an offensive along the road from Sana'a to Ma'rib. By November 1962, the Egyptian Army thus not only had about 10,000 troops deployed in Yemen but was involved in an all-out war. More reinforcements were meanwhile underway and by the end of the year 20,000 Egyptian troops were in the country – supported by Il-28s of Air Group 61, UARAF: due to the lack of suitable air bases in the country, the latter ran their operations from Cairo West, with a refuelling stop at Ras Banas airport, on the Red Sea coast. Obviously, their reaction time was thus very slow, and the efficiency of their operations next to zero: therefore, the mass of reconnaissance and close air support (CAS) sorties flown in support of the Egyptian and Yemeni Republican forces this early during the war was undertaken by a group of Egyptian pilots deployed at Sana'a, operating the available Yemeni aircraft, and temporarily commanded by Gabr Ali Gabr – a former Vampire-pilot of the Suez War.⁶

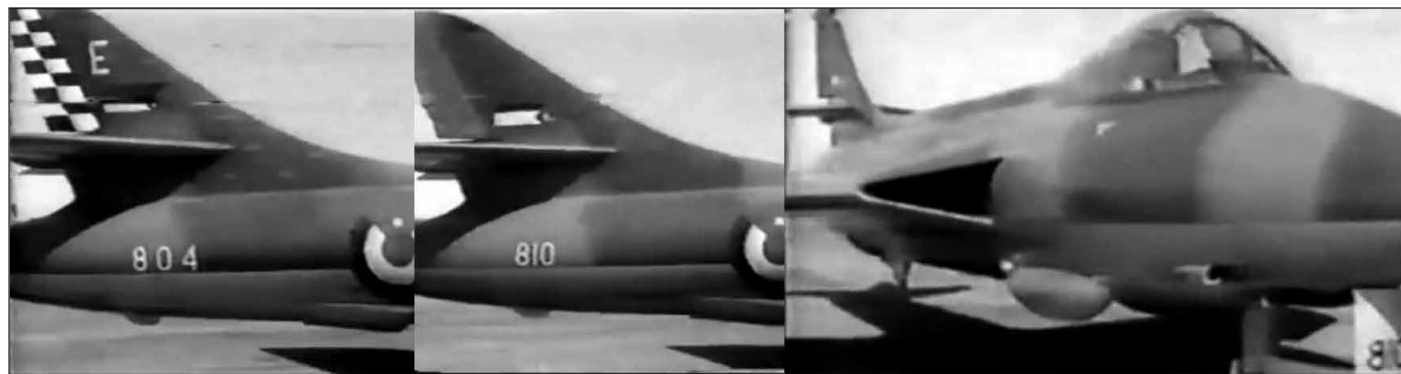
BRITAIN'S DIRTY LITTLE WAR

The reason why the insurgency in Yemen continued spreading over the following weeks and months was not dissatisfaction with the Republican government in Sana'a, but entirely of foreign origin.

Keen to prevent an Egypt-supported Yemen from supporting dissident tribes fighting the British presence in the Protectorate of Aden, the government in London convinced the governments in Riyadh and Amman that support of the Yemeni Royalists was in their best interest. However, when the Saudis ordered their armed forces to deploy along the northern border of Yemen, and support the Royalists, this resulted in a series of defections by dissatisfied pan-Arabists and Nasserists: amongst others, on 1 October 1962, a crew of two flew a Fairchild C-123B Provider transport of No. 4 Squadron, Royal Saudi Air Force (RSAF), loaded with rifles and ammunition for insurgents – to Egypt. Only two days later, another RSAF crew then defected to Egypt flying a North American T-28 Trojan trainer. As a consequence, the Saudi government was left without a choice but to ground its air force and request help from Amman. King Hussein II of Jordan reacted by ordering a deployment of 10 Hawker Hunter F.Mk 6 fighter-bombers and a single de Havilland Dove light transport to Taif Air Base in Saudi Arabia. However, not only did the commander of the Royal Jordanian Air Force, Colonel Sahel Hamzeh, then defect to Egypt, flying a de Havilland Dove, but he was followed by four Hunter pilots in their aircraft. Desperate, the Saudi government put the rest of the Jordanians under a house arrest in Taif, and neither they, nor their Saudi colleagues ever flew a single sortie in support of the Yemeni Royalists again. Instead, London then devised a new plot, in which the Saudis would finance a covert British operation of recruiting veteran members of the British and French armed forces to act as advisors, and that would deliver arms of East European origin to southern Saudi Arabia and northern Yemen



Two Hunter pilots of the RJAF – Saqid ash-Shra (left, from Irbid), and Tahseen Fuad Hussein Saima (from Nabuls on the West Bank) – providing statements for the press after their defection to Egypt, in October 1962. Shra went on to serve as a ground controller, Saima flew MiG-19S – both with No. 20 Squadron, UARAF. (Nour Bardai Collection)



A series of stills from an Egyptian documentary film, showing two of four Hunters flown by Jordanian defectors to the UAR in October 1962. Notable are serials 804 and 810, indicating both aircraft belonged to No. 2 Squadron, Royal Jordanian Air Force: all four Hunters and the Dove were returned to Jordan, a few months later, but the RJAF unit was disbanded as a consequence and its remaining personnel and equipment integrated into No. 1 Squadron. (via Mostafa Mohammed)

GABR ALI GABR: ACADEMIC AVIATOR

Born in 1932, Gabr Ali Gabr came from a prosperous family who owned agricultural land between Kfar Zayat and Desuq in the Nile Delta. At the outbreak of the Palestine War in 1948, he volunteered for the armed services while still in secondary school but was under-age. Nevertheless, Gabr became one of the first students to enter Egypt's newly expanded Military College: at the age of 19, he got his coveted 'blue' air force uniform but was not sent to the Flying School until October 1952, and received his 'wings' only on 1 July 1955.⁷

At the Fighter Training Unit, then at Almaza AB, Gabr Ali Gabr trained on de Havilland Vampires before being assigned to No. 31 Squadron in December 1955. Re-posted to No. 1 Squadron, also equipped with Vampires, his first operational sortie included a low-level penetration of the Israeli airspace over the Negev Desert, following a refuelling stop in el-Arish. Gabr's first combat sortie took place on 29 October 1956, when he was sent to attack Israeli positions east of the Mitla Defile. However, his flight was intercepted and three of his colleagues shot down, two being killed, while one bailed out successfully. An inspection of his gun camera after return to Kabrit AB revealed that he had undershot while firing at one of the Israeli jets that downed his comrades. The following day Gabr flew another sortie against the Israelis east of the Mitla Defile, this time with MiG-15s flying top cover. All the aircraft of the unit were destroyed at Almaza AB on 1 November 1956, ending the war for him. With post-war conversion courses for MiG-15s in Czechoslovakia being reserved for newly-qualified pilots, Gabr was not to be sent there: however, he and a few other colleagues filled empty slots. Back in Egypt in 1957, he underwent a conversion course for MiG-17s and was then assigned as a flight instructor at Bilbeis AB. Health issues eventually led to Gabr Ali Gabr being re-appointed to the Air Warfare Institute at Almaza, where he first received a course in how to teach, and then qualified as a pilot for Il-14 transports. Ultimately, he thus found himself both teaching and flying operational missions – to Yemen, for example. Following a staff course, the combination of his skills led to Gabr being re-assigned to serve



Gabr Ali Gabr in full dress uniform, near the end of his career. (Gabr Ali Gabr Collection)

with the Combined Operational Staff in Yemen: in 1966, he also served as the Commander Sana'a Rawdah AB, before returning to Egypt to be appointed the Chief of the Technical Branch at the Air Warfare Institute. Prior to the June 1967 Arab-Israeli War, Gabr served as Chief-of-Operations in the Operation Group for Army and Air Force Cooperation, in Sinai, pending appointment as a commander of an Il-14 squadron. Amongst others, he found himself flying over many of the army units that were in the process of deploying on the peninsula and could not fail noting that they were totally unprepared and poorly protected. During the war, he received a particularly contradictory order: he was supposed to withdraw his unit back to the Suez Canal via the Giddi Pass, but only by night,



A look at one of the Yak-11s (serial number 562) operated as trainers by the UARAF. Following its – often troublesome – introduction to service in 1956, the type replaced all other trainers in Egypt, and became popular enough in service for the Egyptians to have the idea to deploy it as a fighter-bomber for COIN purposes. (Albert Grandolini Collection)

and to reach the Suez Canal by the next dawn. Disobeying an order for the first and only time in his career, Gabr Ali Gabr ordered his men to move before nightfall, and withdraw along a different route. Eventually, his decision proved a success, with not one man and none of the vehicles in the three-mile-long convoy being lost, despite a long and problematic journey along a narrow road.

With the cooperation between the army and the air force collapsing, Gabr returned to work at the High Command UARF in Cairo. During the following months, he was assigned to the team that directed operations against the Israelis in the occupied Sinai, before returning to the Air Warfare Institute. When Mustafa Shalaby el-Hinnawy took over as the new Chief-of-Staff, he was offered the position of his office manager, but Gabr turned it down because the job require diplomatic skills he believed he was lacking. Instead, he was appointed

the Chief of Operational Training at the High Command and was responsible for offensive operations (Fuad Kamal was responsible for 'defensive' operations at the same time).

During the War of Attrition, Gabr Ali Gabr served as the Chief of the Operation Group attached to the Second Field Army, and then to the Third Field Army, and, from 1972 onwards, with the Egyptian Navy. He was still serving in the latter role during the October 1973 War. In 1975 Gabr Ali Gabr was sent to the Gamal Abdel Nasser Military Academy for an 18-month-long Higher Command Course: eventually, he continued teaching there for another nine years afterwards, with his last position being that of the Chief-of-the-Air Force Chair. Following retirement, Gabr went to a civilian university, and earned his PhD, the thesis being the impact of the politics upon the evolution of both the Egyptian and the Israeli Air Force. This eventually evolved as his first large book.



Gabr Ali Gabr receiving his passing-out certificate from President Gamal Abdel Nasser, during the graduation ceremony at Bilbeis AB, on 1 July 1955. (Gabr Ali Gabr Collection)

with help of chartered civilian- and military transport aircraft from Israel and Iran. This operation eventually converted a minor armed conflict into a years-long and bloody civil war that, in combination with Saudi efforts to convert the Yemeni population to the militant, Wahhabist branch of Sunni Islam, resulted in the disintegration of the country in recent years.⁸

COUNTERINSURGENCY AIRCRAFT

Through December 1962 and early 1963, Egyptian military engineers had expanded and improved all the existing airfields of Yemen, and then constructed a number of new ones. The runways of Sana'a, Sa'ada, Ma'arib, Mitamma, Ibs and Tihama were all lengthened and hardened for operations of medium-sized transports, while a new air base was constructed north of the Yemeni capital, named Sana'a Rawdah after an ancient fort nearby. Bolstered by an improved infrastructure, the build-up of troops and supplies developed much quicker, and in March 1963, Amer arrived in Sana'a for the third time, to personally lead the next major operation against insurgents. Codenamed Operation

Ramadan, this was initiated on 13 March 1963, with the aim of opening and securing the roads connecting Sana'a with Sa'ada in the north, and Ma'rib in the east, before the involved forces were to turn north-east and north, respectively, and – in a giant pincer – crush the Royalist forces in the al-Jawf Governorate of north-eastern Yemen. Initially, this offensive proved highly successful: not only in that it took the insurgents by surprise, but it also caused most of their leaders to flee to Saudi Arabia and to the Aden Protectorate, and enabled the Egyptians to reach positions from which they could interdict routes along which the Royalists were resupplied. However, the insurgents began to recover during April as the Egyptians began running out of steam. Not only could Il-28 units operating from Egypt not keep pace with the ground advance, but the crews of An-12 and Il-14 transports found themselves overburdened with demands for supplies. Amer thus ordered a stop, and a major reconstruction and expansion of the primitive dirt strip outside Hodeida, with the aim of making this capable of supporting operations of Il-28 bombers.



A Yak-11 equipped with machine gun (see muzzle-opening near the top of the engine cowling), the extra radio and Egyptian-manufactured launch rails for Sakr rockets, seen underway over Yemen while piloted by Abdel Wahhab el-Shennawy. In Yemen, the type was flown by a mix of flight instructors from the Air Force Academy at Bilbeis, MiG-15 and MiG-17 pilots, and by some Il-28 pilots. (Tarek el-Shennawy Collection)



A close-up view of one of the Yak-11s modified to serve as a fighter-bomber for COIN purposes. As well as the extra antennae, such aircraft were best recognised by the muzzle-opening for a single 7.62mm UBK machine gun. Interestingly, COIN Yaks of the UARAF retained their light blue overall livery, and even wore 'yellow trainer bands' around the rear fuselage and on each wing. (Jens Heidel Collection)

That said, the long reaction time of the UARAF bomber units home based in Egypt, and the disfunction of the Yemeni Air Force had already prompted Cairo into finding alternative solutions. Indeed, as early as of 23 October 1962, the UARAF officially requested the delivery of 20 Yakovlev Yak-11 trainers from Prague, modified to carry armament. The Czechoslovaks scrambled to serve, and selected aircraft drawn from their air force were modified through the installation of an UBK machine gun, bomb racks, a radio station, and radio compass. They were shipped to Egypt in early 1963, together with a consignment of spares and a team of engineers responsible for their assembly. The entire project was completed by September 1963, by when Cairo placed an order for 20 additional armed Yaks, while the first batch was disassembled and transported to Sana'a by An-12s. The COIN Yaks arrived in Hodeida and Sana'a together with several MiG-15s and MiG-17s, and a group of appropriately qualified pilots, including Tamim Fahmy Abdullah. The resulting unit included primarily pilots drawn from the MiG-15/17-equipped Air Group

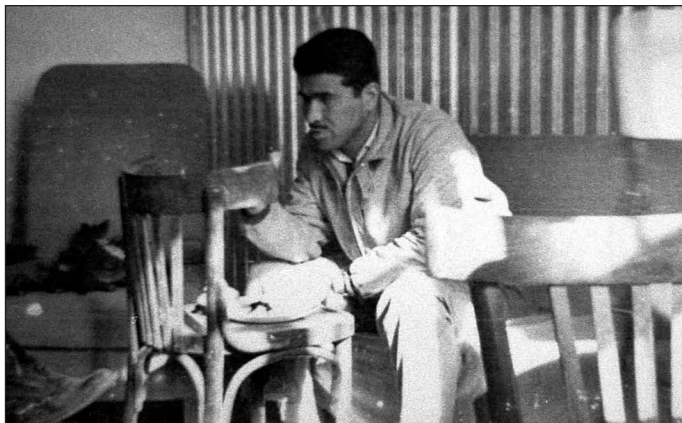
2, but never received an official designation: initially commanded by Fikry el-Gindy, it was subordinated to the new commander of the UARAF contingent in Yemen – which now also included a 'unit' flying armed Yak-11s, and several Il-14 transports – Colonel Hassan Abd al-Qadir, who replaced Gabr Ali Gabr around the same time.⁹

EGYPTIAN COIN TACTICS

Once the UARAF deployed its COIN contingent to Yemen, it gradually began to develop its own COIN tactics. Initially at least, this primarily consisted of on-call CAS-operations: depending on their availability or the geographic area in question, either Yak-11s, or MiG-15s and MiG-17s were scrambled whenever a ground unit called for help. As well as their internal machine guns and cannons, respectively, both types were now equipped with double launch rails for 76mm and 88mm Sakr rockets, originally designed by Oerlikon of Switzerland, but manufactured under licence in Egypt. The usual formation consisted of two aircraft, rarely four, one of which would fly the attack while the other would stay high and monitor the area to warn about ground fire. MiG-15s and MiG-17s were sometimes – but not regularly – operated in the same

formations. With there being no useful maps, and no navigational aids, and their aircraft being equipped only with a compass, pilots had to learn to orientate on the basis of geographic features: they learned to recognise particular mountains and orientated on their position. As a consequence, many major geographic features in northern Yemen received Egyptian nicknames, for example: 'Like a Knife', 'Like a Jelly', or 'Like two Trees'.¹⁰

The second type of operation – and one already conducted since late 1962 – was convoy protection. Yemen had only a very poor road network in the 1960s, and whatever roads and tracks were available wound between the mountains, often through narrow gorges offering much opportunity for ambushes. In the light of numerous Egyptian and Republican units suffering heavy losses in these, the practice was introduced in which every single movement of ground units was escorted by at least one Yak-11, which flew reconnaissance ahead of it. These two types of operations remained dominant during the next Egyptian offensive: launched in June 1963, this dispersed Royalist concentrations west and north-west



Conditions in Yemen on Egyptian arrival were still primitive, with airfields lacking not only paved runways, control towers and maintenance facilities, but also terminals and accommodation. This photograph shows Fikry el-Gindy enjoying his lunch in an office of the old Sana'a airport. (Fikry el-Gindy via David Nicolle)

of Sana'a. Another – Operation Haradh, launched in August of the same year – was heavily dependent on air support and saw the next combat jump by 250 Egyptian paratroopers, south-west of Sa'adah, which then attempted to link-up with a mechanised column advancing along a road. This time the Royalists avoided, and then repeatedly ambushed, the Egyptian column, causing it losses, and claimed to have also shot down an 'Ilyushin bomber'.

Operation Haradh exposed the issue of finding targets and coordinating operations of ground forces and fighter-bombers over the rugged terrain of northern Yemen. This led to the UARAF

starting to use Il-14 transports as airborne command-posts and for radio-relay: they would carry an extra radio with an operator that could communicate with both ground units and fighter pilots. In turn, not only did some Il-14 crews begin loading light bombs which they would then roll out of side-doors upon targets, but the idea was born of combining fighter-bombers with ground troops as a sort of intervention force: such operations would first see MiGs or Yaks attacking selected targets in the combat zone, to soften-up air defences, and then the paras making a combat jump to facilitate a ground attack and mop-up, supported by a second wave of fighter-bombers. By late 1963, the Egyptians started using Mi-4 helicopters instead of Il-14 transports to deploy their assault units.

SECRET STRIKES ON SAUDI ARABIA

On top of CAS and convoy-escort operations, in April 1963 the UARAF began flying air strikes on Royalist bases in southern Saudi Arabia. While usually misreported as 'indiscriminate attacks on civilians' by the Western media, these were seeking to hit carefully selected targets – foremost ammunition storage depots reported by DM1's informers, of which there were quite a few within the Royalist ranks. Indeed, it seems that secondary detonations of such – often: 'primitive' – facilities were a reason for numerous civilian casualties in the Saudi towns of Jizan and Najran through May and June 1963. In other cases, civilian casualties were caused by little more than poor aiming by bombardiers of the Il-28s involved. Most such operations included a pair or a four-ship of Il-28s, which exclusively deployed Soviet-made 100 and 250kg bombs:

they were usually escorted by a pair, but sometimes by up to six MiG-15bis or MiG-17Fs, which principally used their internal 23mm and 37mm guns to strafe ground targets.¹¹

Last but not least – and entirely unknown to the public until only a few years ago – the UARAF began deploying its brand-new Tu-16 bombers, still flown by their Soviet crews, for nocturnal air strikes on targets in Saudi Arabia. According to Russian sources, crews of the 244th Bomber Aviation Regiment flew their first combat sorties in October 1962, and by April of the following year most of them had several dozen missions in their log books, as recalled by one of the Soviet veterans, Colonel E. A. Aslanov:

From October 1962 to April 1963, I was on a special mission in the United Arab Republic, in Egypt. I participated in acts of war providing international aid to the Yemeni Republic. The crews of the regiment,



President Nasser taking a closer look at Sakr rockets. Originally developed from a Hispano-Suiza design of Spanish origin, later modified by Oerlikon of Switzerland, in Egypt they were manufactured by Factory 333 in Helwan, in 76mm and 88mm calibres. While original HS designs were deployed from a multitude of fighter-bombers in Spanish service – including locally-manufactured versions of the famous Messerschmitt Bf.109 – in Egypt they were deployed on MiG-15bis, MiG-17Fs, and Yak-11s. (Albert Grandolini Collection)



A group of Egyptian pilots and ground crews seen during a break between operations, still at the old Sana'a airport. Fikry el-Gindy is visible, fourth from the right in the front row. (Fikry el-Gindy via David Nicolle)



A para-commando of the 77th Battalion Saika jumping from a Mi-4 helicopter. Combat jumps of paratroopers from helicopters in Yemen were relatively rare, because the UARAF quickly learned that it was safer – for everybody involved – to deploy troops by helicopter. (Jens Heidel Collection)

together with crews of the UAR, performed combat flights on Tu-16 aircraft.... I completed more than 30 sorties.

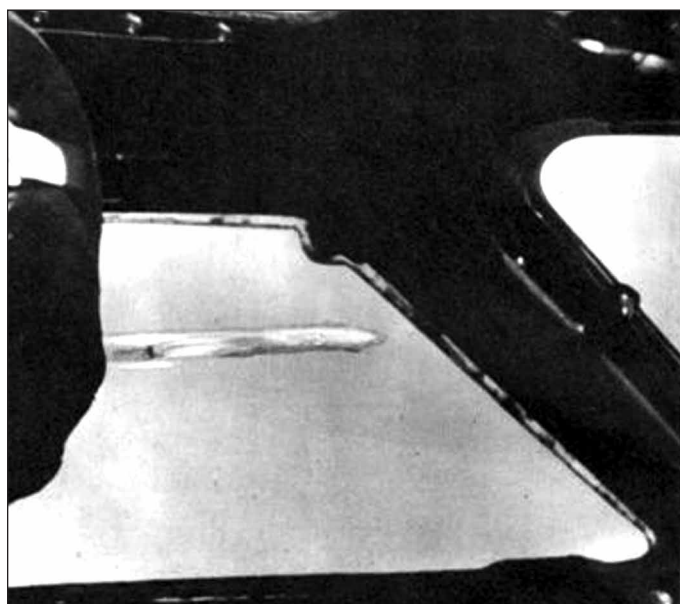
Indeed, according to Abed al-Menahim Khalil, the first commander of the Egyptian expeditionary force in Yemen:

It was easy to demand Tu-16 strikes. I used the codename "Mubarak" for each strike I wanted and had only to say "Mubarak" and add coordinates. The Tu-16 would fly over the Red Sea by night, bomb and return to Egypt. This codename was used because Mubarak flew some sorties himself.

Actually, it was only in spring or summer of 1963, that the first combat sorties by Tu-16s were flown by mixed, Soviet-Egyptian crews, initially including Mubarak and Sidqi only.¹²

That said, and overall, the UARAF developed its COIN tactics with whatever equipment it could obtain and

based on first-hand combat experiences – years before far better known, and much more carefully studied Western air forces did so, whether in South-East Asia, or in Africa. The tactics in question were far from perfect, not only due to the limitations of available equipment, but they were constantly improved and starting to significantly improve the efficiency of Egyptian aerial operations. Rather tragically – not only for Egypt, but the entire Arab world – all of these precious lessons remained entirely ignored in Cairo.



A view over the right shoulder of the pilot, from the cockpit of a Tu-16 bomber, of another member of the same formation – a similar view to that which Soviet crews, and, starting in early 1963, a small number of hand-picked Egyptian pilots, would have of each other during their training flights in Egypt, and then combat sorties over Yemen. (Nour Bardai Collection)



Because of Moscow's sensitivity over the involvement of its crews in combat operations over Yemen, even the delivery of Tu-16s was kept secret from the public in the UAR until the type was entirely operated by Egyptians in 1966. However, by then, Soviet and several Egyptian aircrews had already flown hundreds of secret airstrikes on targets in Yemen and Saudi Arabia. These three 'vanilla' Tu-16 medium bombers of Air Group 65 were photographed while overflying Cairo during a military parade in 1966. Notably: all three retained their Soviet-style 'bort' numbers (large, two-digit serials), from front towards the rear: 27, 87, and 92. (David Nicolle Collection)

3

FATEFUL 1963

As a result of Nasser and Amer's system of rule by patronage, by 1963 the UAR armed forces began showing obvious signs of degeneration in the quality of their training and overall efficiency. In the army and air force in particular, top commanders began misappropriating assets under their control – including tactical exercises – for the purpose of showing off, and exploiting these for power and personal gain, instead of using them for their actual purpose: to train their troops and themselves. As a result, the 'trigger pullers' – whether troops, tankers, or artillerists on the ground, or pilots flying combat aircraft – received ever less realistic tactical training, and next to no live-firing exercises. Years of such practices corrupted the UARAF from within, creating an atmosphere where squadron- and brigade-commanders could not admit to Amer that their pilots had not received sufficient training, or that their ground crews were still working at a pace considered obsolete. Matters were further complicated by Amer's insistence on supervising the work of all the major commanders and their commands, literally micromanaging everybody and everything down to the squadron level. By promoting his favourites to selected positions – many of which had no operational function at all but secured a handsome income and prestige – he gradually created an exceptionally complex chain of command for every single branch, in which nobody and nothing could move, and nobody was promoted or decorated without his permission. In this atmosphere, the quality of military leadership was entirely ignored: this reached such proportions that, when the Supreme War College of the UAR Armed Forces was opened in Cairo in 1964, participating officers did not receive a single lesson in effective leadership. Finally, instead of improving the cooperation between air power and the ground forces, Amer made it entirely impossible: on the contrary, he created a deep rift and fierce rivalry between different branches.¹

JUNE 1963 ARMS DEAL²

The war in Yemen was still heating up when, in early 1963, DM1 obtained better intelligence on the Israeli order for Mirage IIICJs. This prompted a re-evaluation of the situation in Cairo, resulting in a conclusion that the 48 MiG-21F-13s in the process of delivery would not be enough to match an Israeli fleet of more than 70

Mach 2 capable interceptors. Never keen to support the HA-300, and still under the influence of Riyadh's advice, Air Chief Sidqi Mahmoud began demanding the acquisition of additional combat aircraft.³

Nowhere, and never before or again, did Amer's playing of the army against the air force become as obvious as during the months pending the signature of the next major arms deal with the USSR, in June 1963. By then, his personnel policy was causing deep rifts even within the UARAF. Demonstratively pro-Soviet and insistent on Riyadh's recommendations vis-à-vis fast and high-flying interceptors to the point where he preached them like dogmas, Air Chief Sidqi Mahmoud demanded the acquisition of not only 48 additional MiG-21F-13s, but also of a similar number of Sukhoi Su-9s – a jet that was bigger, more powerful, thus slightly faster, and could climb even higher.⁴ However, his newly-appointed deputy, Air Vice-Marshal Madkour Abu al-Ezz – who was advanced in rank by Amer for successfully graduating 11 classes of new pilots and ground personnel as the commander of the Air Force Academy at Bilbeis – was of a different opinion. A professional officer, he was a strong proponent of the combined arms doctrine and insistent on the UARAF understanding and learning to run all aspects of air power: he saw the air force as not only responsible for air defence, and a provider of transport and helicopter services, but as an offensive arm, capable of winning not only battles, but entire wars. Correspondingly, al-Ezz demanded that the air force receive priority in financing over all other branches, severely criticised the acquisition of the big and slow Tu-16s, and instead of them and more MiG-21s wanted the air force to be re-equipped with a fighter-bomber capable of hauling 3,000kg (~6,000lbs) of bombs at a speed of 1,000km/h, at low-altitude, all the way to Israel. Furthermore – and exactly like Riyadh before him – al-Ezz demanded the construction of dozens of new air bases to better disperse the available aircraft, and the construction of hardened aircraft shelters.

The result of related discussions in Cairo and then in Moscow was nothing but ironic: while in Israel and the West the June 1963 Arms deal – valued at anywhere between US\$220 and 500 million – was often characterised as 'the most significant of its time in the Middle East', the majority of it envisaged acquisition of additional equipment for mechanised formations of the army. Certainly enough, the UARAF was granted permission to obtain 48 additional MiG-21s, and then the radar-equipped MiG-21FL, and to obtain Sukhois – but no Su-9 interceptors, which the



An Egyptian pilot wearing the GSh-4 helmet and VKK-3 partial g-suit, seen next to the fin of a MiG-21F-13. Notable on the fin and around the exhaust of the jet are numerous maintenance stencils: on jets delivered to the UARAF, all these were applied in enamel blue and in the English language. Warning stencils were applied in red. (Jens Heidel Collection)



Another Egyptian pilot in same outfit, seen atop of the ladders, next to the cockpit of a MiG-21F-13 (probable serial 5020). (Nour Bardai Collection)

Soviets would not sell, anyway: instead, it was to get Su-7 fighter-bombers. Even then: it had to wait for these for several years longer both due to the developmental issues in the USSR, and Cairo's lack of funding. As far as Amer was concerned, that was the only compromise he was ready to agree: al-Ezz received his 'promise' that the cooperation between the army and the air force would improve, but this came at a price. In turn, Amer forced the Air Vice-Marshal to resign his commission, and appointed him the governor of the Aswan Province. With the removal of al-Ezz, the readiness rates and overall combat effectiveness of the UARAF plummeted below all acceptable levels.

THEORIES BECOMING DOGMAS

To what degree the efficiency and organisation of the UARAF had degenerated by this time, and to what extent some of Amer's favourites misused their positions for their own purposes, became obvious several times during 1963 and indeed by the time the next generation of pilots completed their education at the Air Force Academy, in May of that year. Amongst them were Salah Danish, Naji Lachin, and Samir Aziz Mikhail. All were promptly rushed through a jet conversion course and by the end of the year had even completed a fighter training course, becoming qualified

to fly MiG-15s and MiG-17s, and then MiG-19s, respectively. However, instead of all being assigned to the MiG-19 equipped No. 20 Squadron, as could be expected, they were then re-distributed: Lachin – irrespective of his excellent notes – was 'retrograded' to fly MiG-17s; Danish and Mikhail were ordered to undergo another conversion course, this time for MiG-21F-13s, but after completing this, Danish was assigned to MiG-19 equipped No. 20 Squadron.⁵

The novice Samir Aziz Mikhail thus underwent a MiG-21 conversion course at Cairo West together with veterans like Tamim Fahmi Abdullah and Awad Hamdi – and they all found themselves supervised by commanders that considered Soviet theories about modern air warfare as dogmas, as recalled by Abdullah:

In November 1963, I completed my conversion course and joined a squadron at Cairo West flying MiG-21F-13s. It was a beautiful aircraft. I enjoyed it very much, but I did not like the kind of training we were getting. It was very theoretical – and we were not unique in this. Probably the Soviet Union and the Warsaw Pact all trained the same, but I never forgave us for following the same path. We were in combat a lot so we should have known better, but we got our equipment from them and trusted the Soviets – while not trusting ourselves! We were training all the time at high altitudes, high speeds, supersonic, and anyone who would fly very low would be court-martialled. I was once in big trouble because I flew low – which we did a lot in Yemen. I completed flight testing a MiG-21F-13 and had nothing to do after that test. So, I flew some practice for low-level flying: my commanders saw this and they didn't like it.⁶

SYSTEM FAILURE

Ironically, regardless how much the UARAF commanders insisted on training their interceptor-pilots in operations against high-flying and fast targets, they received next to nothing in return. On the contrary, ever more often, attempts to catch high-flying Vautour IIBRs – usually underway at altitudes of about 13,716m (45,000ft) – and then Mirage IIIRJs (which could reach even higher than Vautours) that regularly operated inside the UAR airspace remained unsuccessful. This reached a point where any kind of a successful engagement tended to prompt an outburst of jubilation in Cairo. On 23 July 1963 – mid-way through celebrations for the 11th anniversary of the Egyptian Revolution – a pair of MiG-19s from No. 20 Squadron, piloted by Captain Adil Ahmad and

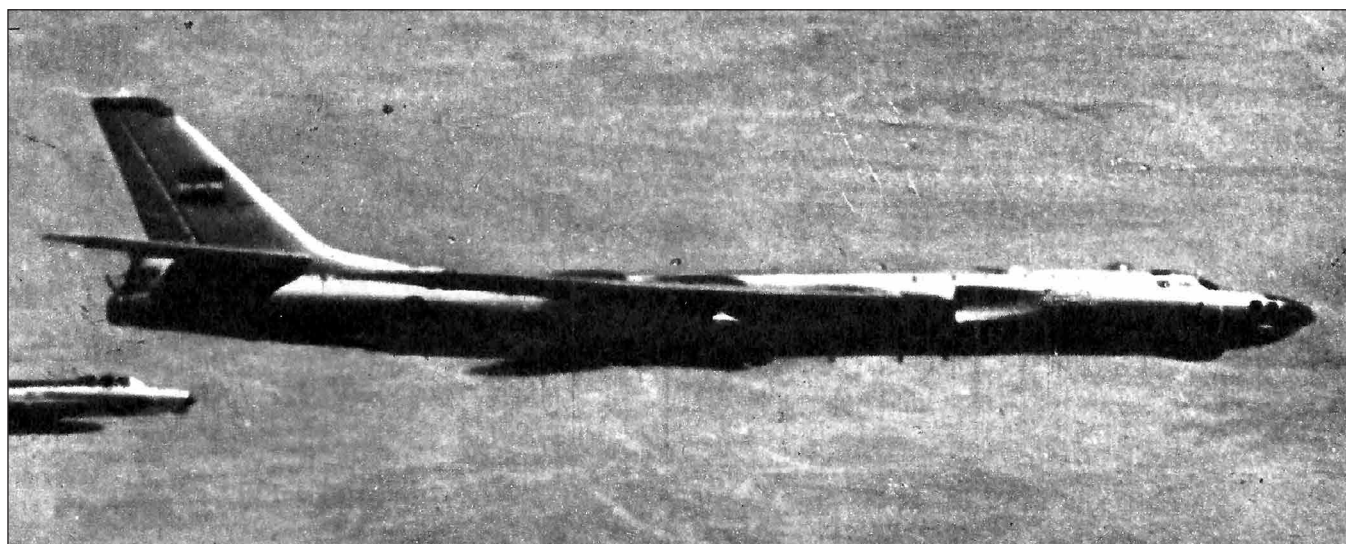


A MiG-19 of No. 20 Squadron seen streaming its braking parachute, decelerating after landing. (Jens Heidel Collection)

USAMA MUHAMMAD 'BUNNY' SIDQI: EGYPT'S TOP BOMBER PILOT

Son of Muhammad Sidqi (Junior) – who earned his pilot's licence in Germany, was the first Egyptian to fly from Europe to his home country, in December 1929 and January 1930, and subsequently served as chief pilot of the Misr Air airline – and of Franziska Selma Paula Bach (great-great-great-granddaughter of the famous composer Johann Sebastian Bach),¹³ Osama 'Bunny' Sidqi was born on 23 January 1927, and earned his airline pilot's licence in 1946. Two years later, he was one of the Misr Air pilots to volunteer for service with the Royal Egyptian Air Force during the Palestine War. Usama flew Douglas C-47s and DC-3s during that conflict and was a member of the team that converted several of these into makeshift bombers through the installation of bomb-shackles on their lower fuselage. He was almost certainly the pilot of one of two such aircraft claimed 'shot down' by an Israeli Messerschmitt/Avia S.199, on 3 June 1948. As so often ever since, the Israeli claim was a wild exaggeration (subsequently overblown into legend): only one of two aircraft was lightly damaged, and nothing happened either to Usama or any of the other crew involved.¹⁴ Sidqi continued serving after the war, and flew Beech B-18s and Curtiss C-46 Commandos, and then all the three types of obsolete, piston-powered four-engined bombers Egypt acquired from Great Britain in the late 1940s, including Avro Lancasters, Handley-Page Halifaxes, and Short Stirlings. Already a highly decorated pilot and officer, qualified to fly at least a dozen different aircraft types, in 1955 he converted to Il-28s, but is not known to have flown combat sorties with this type during the Suez

War of 1956. Sidqi was highly decorated again in 1959 and 1962: while reasons remain unknown, the fact that he commanded one of two bomber squadrons of Air Group 61 by the time, and was renowned for his expertise in piloting the Il-28s at extremely low altitudes, makes it likely that the medals in question were earned for nocturnal reconnaissance operations over Israel, described in Volume 1. In 1961, and together with Hosni Mubarak, Kamal Darwish, Fawzi Shaban, and Usama Muhammed Sidqi, he travelled to the USSR for conversion training on Tupolev Tu-16s: qualified as an instructor-pilot for this type, he was one of first Egyptians to pilot Tu-16s on their super-secret nocturnal strikes on Saudi Arabia in early 1963. Over the following four years, he is believed to have flown over 100 such combat sorties: Sidqi was certainly the first to land one of these medium bombers at Hodeida AB. Subsequently, he supervised the conversion training of additional crews and the build-up of Air Group 65, in which he served as the Deputy Commander, right next to Mubarak. He retired from active service before the June 1967 Arab-Israeli War but was recalled to duty only months later. Over the following two years, he commanded a squadron of five Il-28s of the UARAF, deployed to Nigeria during the Biafran War, and flew dozens of additional combat sorties. Usama Muhammad Sidqi retired again after the personnel of this unit were recalled to Egypt in 1969. He left behind no autobiographies, but did leave a giant archive which is yet to be properly investigated.¹⁵



A Tu-16 bomber of the UARAF, seen while escorted by a MiG-21F-13. Of course, the interceptor lacked the range to offer protection for this medium bomber all the way to targets in northern Yemen or southern Saudi Arabia, and thus the latter flew all such missions by night, at extremely low altitudes. (Jens Heidel Collection)



An SMB.2 of the Israeli Air Force, seen on a still from Mawawi's gun camera. As obvious from the position of the crosshair, this burst of 30mm gun fire from the MiG-19S missed its target by about 15 metres. (Nour Bardai Collection)



Fikry el-Gindy with his dog (named Saud because of contemporary differences between the UAR and Saudi Arabia) seen on a MiG-17F serial number 2202 at el-Arish AB, in 1965. (Fikry el-Gindy Collection)

Captain Muhammad Kamil al-Muwawi, launched from Fayid AB for a training mission over the Sinai. Shortly after passing the Bir Gifgafa area they came under attack from a pair of Mirages but managed to avoid their first runs and involved the Israelis in a fleeting, high-speed air combat. The Israelis fired several times at Ahmad and Muwawi, without scoring any kind of hits before their Mirages were reinforced by a pair of SMB.2s. The UARAF reacted by scrambling one and re-routing another of its MiG-17 formations towards the combat zone, as recalled by Fikry el-Gindy who was at el-Arish AB that day:

There was a flight on a training mission. I was still on the ground, in the cockpit of my MiG-17F and listening to the



Adil Ahmad and Kamil al-Muwawi during a press conference staged in Cairo on 24 July 1963. (David Nicolle Collection)

radio calls. The attacked section aborted their training mission and turned to engage. The flight leader, Adil Ahmad, got into a fight with Israeli jets. That was when I and other pilots of my flight were told to scramble and go up to help get him out. I flew as Number 2 in my formation and we went to the area of the reported dogfight, but then heard that Ahmad and his Number 2, Muwawi, had got safely back.

During the last moments of this engagement, Muwawi caught one of the Israelis in his crosshairs and fired a burst, a few shells from which might have hit. Upon return to Fayid, he reported correspondingly to his squadron CO who instantly – and without any further investigation – ‘upgraded’ Muwawi’s report to a ‘confirmed kill’: supported by the brigade CO, and then the CO Eastern Command UARAF – both of whom were keen to boast to Amer – this ‘upgraded claim’ was promptly forwarded to the High Command. Therefore, Ahmad and Muwawi were invited to Cairo, decorated by Amer and then presented to the international media with the aim of landing a major propaganda coup through spreading ‘breaking news’ about a ‘major victory against Israel’. Actually, until today it remains unknown whether Muwawi ever hit anything at all.

While one might expect that this was an exception to the rule, and the slower and older MiG-19s would have been less successful in intercepting high-flying Israeli reconnaissance jets than the brand-new MiG-21s, in reality, things did not get the least bit better. On 11 November 1963, it was the turn of the UARAF MiG-21F-13s to launch their first known intercept attempt – this time against a pair of Mirage IIIRJs underway high above northern Sinai: both the Israelis managed to distance before the MiGs came close to opening fire. This pattern repeated itself several times through 1964: almost weekly, MiG-19s and MiG-21s were scrambled to intercept high-flying reconnaissance fighters – some of which reached the Nile Delta – and every single time the Israelis came away. Certainly enough, according to unofficial Egyptian sources, there was one instance – sometime in July or August that year – that two MiG-21F-13s managed to get close enough to fire two R-3S missiles, but these were outrun by their targets. Overall, there was a total system failure within the UARAF: nevertheless, its top commanders remained complacent, convincing both their political masters and their subordinated officers about their own superiority vis-à-vis Israel.

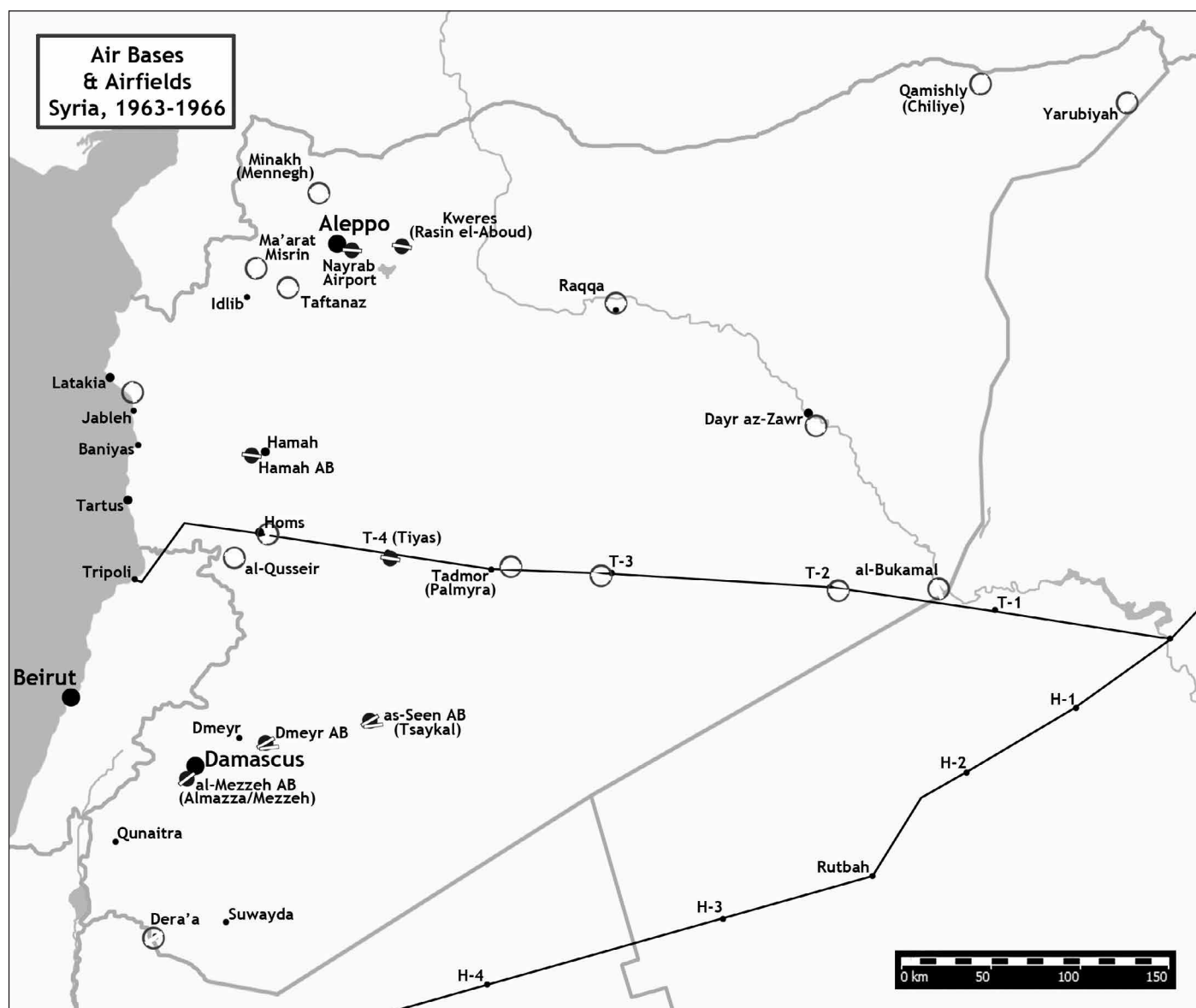
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THE RISE OF THE BA'ATH – AND HAFEZ AL-ASSAD

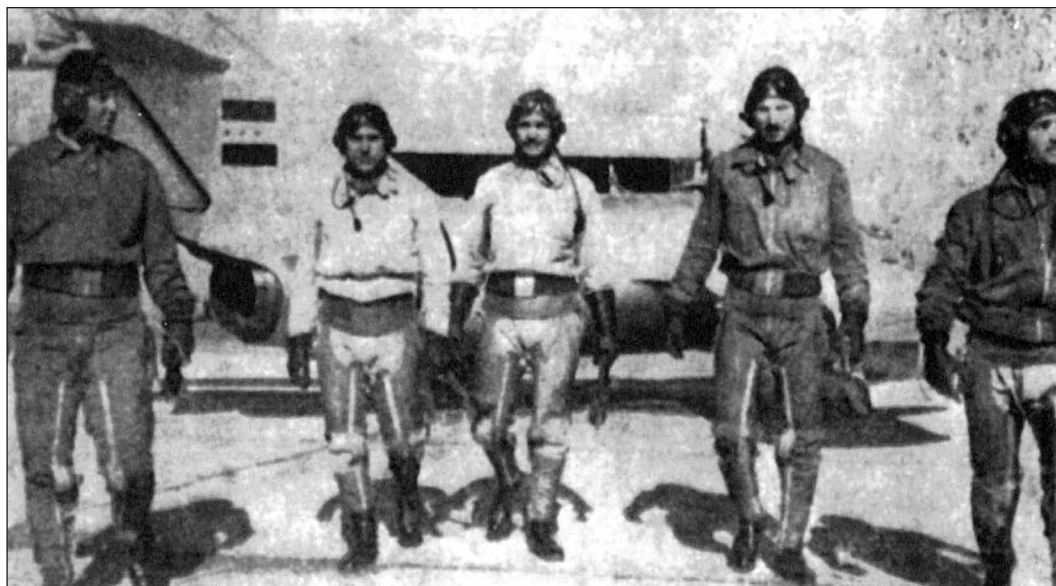
The year 1963 was fateful for Syria as well. As broached in Volume 1, after the counter-coup in Damascus of 28 September 1961, and the subsequent dissolution of the UAR, the Syrians scrambled to rebuild their air force. This proved anything but easy and the list of reasons was seemingly endless – to the degree it was actually surprising that the Syrian Arab Air Force re-emerged in a matter of a few months. Certainly enough, the rapid economic recovery of the country enabled the government in Damascus to, after an unsuccessful search in the West, place an order for 34 MiG-21F-13s and four MiG-21U two-seat conversion trainers from Moscow on 19 June 1962. However, 'even' the Soviets would take time to manufacture and deliver the new aircraft, and it would take the Syrians time to introduce them to service. Meanwhile, the SyAAF had to make do with what was left behind by the Egyptians – which was not much.

COLLECTING PIECES

The word is that during the times of the UAR, the Egyptians 'evacuated' – which in many cases meant little less than 'stripped down' – almost everything they could take away from Syrian air bases, including all the training tools and furniture from most of the military facilities in the 'Northern Province'. Whether this is truth remains unknown, but it is certain that the Egyptians took away the mass of combat aircraft acquired by Syria in 1957-1958. What the UARAF left behind in September 1961 were four Il-28R reconnaissance bombers, 40 MiG-17Fs, five each of Mil Mi-1 and Mi-4 helicopters, and a flight operating a total of seven Ilyushin Il-14s and one Douglas C-47 Dakota. On the positive side, during the times of the Union the UARAF constructed eight early warning radar stations equipped with Soviet-made P-8 systems and tied these into a network covering all of Syria. Moreover, while replacing them with Yak-11s at home, the Egyptians brought all of their surviving de Havilland Canada DHC.1 Chipmunk T.Mk 50 trainers: together with examples acquired by Syria in the 1950s, this resulted in the availability of about 25 airframes as of 1962. While these were used as basic trainers, the Syrians had no option but to overhaul a handful of Supermarine Spitfire F.Mk 22s left behind from pre-UAR times, and press these into service as advanced trainers. It was in this fashion that the process of training new



A map of air bases and airstrips in service with the SyAAF during the period 1963-1967. (Map by Tom Cooper)



This photograph, showing a group of pilots of No. 30 Squadron, SyAAF, in late 1961 or early 1962, provides clear evidence about the national insignia used by the re-established air force. Instead of re-introducing markings from before 1958 (with green, white, and black fields, and red stars), the Syrians 'simply' added the third green star to the white field. (Tom Cooper Collection)



While all the radar-equipped MiG-17PF interceptors and Il-28 bombers, and the majority of MiG-15bis/UTIs and MiG-17Fs acquired by Syria from Czechoslovakia in 1955-1958 were taken away to Egypt during the times of the Union, the UARAF deployed its No. 101 Squadron with 20 MiG-17Fs to the 'Northern Province', instead. The equipment and personnel of this unit – re-designated No. 30 Squadron by 1961 – formed the core of the combat fleet of the new SyAAF (and its Air Brigade 3) in 1962-1963. (David Nicolle Collection)

pilots and ground crews was re-started in 1962. Unsurprisingly, 40 new cadets had to be sent to Czechoslovakia for three years of pilot training, starting in September of the same year.

In regards of the support infrastructure, a series of contracts with Bulgarian, Czechoslovak, East German, and Polish companies stipulated the construction of several new facilities, and expansion of numerous others. The Bulgarians were contracted to construct a new air base atop the disused airfield near the T-4 pumping station in central Syria on the pipeline connecting Iraq with the port of Tripoli in Lebanon, while Czechoslovak companies were commissioned to reconstruct and expand Dmeyr AB, Kweres AB, and Nayrab International Airport outside Aleppo. Finally, the East Germans were contracted to construct a new and particularly large Damascus International Airport about 30 kilometres south-east of the capital. The latter project, launched in 1962, was of special importance and urgency because at the time the SyAAF's primary air base, al-Mezzeh, in the south-western outskirts of

Damascus, was crammed full with military aircraft, and still served as the primary international airport of the country: situated less than 60 kilometres from the nearest point on the armistice line with Israel, it was particularly sensitive to any kind of a surprise attack.

Theoretically, the service under the command of Major-General Wadiyah Makabri was thus slated to be in a reasonably good condition in a matter of two, at most three years. Indeed, it could be said that Syria had the unique opportunity of creating an entirely new, coherent, professional, highly effective and modern air force. In reality, nothing like this happened, and the reason was the continuous and violent unrest that had been ripping the country apart for decades.

THE MESS OF 1963¹

The less than two 'happy years' of Syria under the government of Nahzim al-Qudsi, and of the SyAAF under the command of Major-General Makabri were over before long. They ended with the military coup of 8 March 1963. Inspired by a similar putsch in Iraq that took place only a month earlier, this plot was run by the Military Committee of the Syrian Regional Branch of the Arab Socialist Ba'ath Party – led by Lieutenant-Colonel Salah

Jadid, Colonel Muhammad Umran, and Captain Salim Hatum – in cooperation with Nasserist officers of the armed forces, of which there were still hundreds. Umran established himself in control of the crack 70th Armoured Brigade, while other plotters neutralised the commanders of major army units in Qatana and al-Kisweh. Hafez al-Assad – discharged from the UARAF and imprisoned after the coup of September 1961, but now back to civilian life in Syria – managed to persuade the commander of Dmeyr AB, Colonel Heitham Muhaini, and his pilots to disobey any orders from Qudsi's government or his supporters.

The coup brought to the power a Ba'ath-dominated government of Salah ad-Din al-Bitar (one of the founders of the Ba'ath Party), and a group of Nasserists, and signalled the start of Hafez al-Assad's climb to power: his successful negotiations with Muhaini, and the fact that MiG-17 pilots decided to side with the former pilot instead of attacking the coup-plotters, earned him the status of an outright 'star' of the Ba'ath. Correspondingly, he was reinstated



Although of very poor quality, this is an extremely rare photograph showing two SyAAF Chipmunks wearing the insignia of the SyAAF as introduced in 1962-1963 – including a tri-colore in red, white, and black, and three green stars. Notably, the roundel on the nearest aircraft appears to have received no stars at all. (Mohammad Assad Moukiiad Collection)



A group of cadets with a DHC.1 Chipmunk T.Mk 50 trainer in Syria during the times of the Union with Egypt, when Egyptians brought all of their aircraft of this type to Nayrab AB. A total of about 25 Chipmunks formed the backbone of the re-established Air Force Academy from 1962 until 1970. (Albert Grandolini Collection)



From left to right: Captain Salim Hatum, Colonel Muhammad Umrani, and Lieutenant-Colonel Salah Jadid (with cap), celebrating the successful coup of 8 March 1963. All younger than 40 at the time, they would go on to establish the Military Committee of the Ba'ath Party, but then became bitter enemies only waiting for an opportunity to liquidate each other. (via R. S.)

into the SyAAF with the rank of Lieutenant-Colonel and appointed the commander of the Dmeyr AB. When Major-General Ibrahim voiced critique of such methods and such a concentration of power in the hands of a single man, the Military Committee of the Ba'ath dismissed him and replaced him with Major-General Louis Dakker on 1 May 1963.

Although considered a professional officer and widely popular in the service just for his energetic style of command (not to mention his fierce anti-Zionism), Dakker's grip upon the SyAAF proved far less than perfect. When Nasserists staged their own coup against

the Ba'ath Party on 18 July 1963, four MiG-17 pilots from Mezzeh AB bombed the Army HQ in Damascus. Quick reactions by Assad grounded the rest of the fleet, and the Ba'ath remained in power, but as a consequence, Jadid, Umrani, and Hatum forced the Chief-of-Staff of the Syrian Arab Armed Forces, Colonel Ziad al-Hariri, to reorganise the SyAAF through the introduction of brigade-level formations: henceforth, the command of these unified the control of not only the bases, but the flying units deployed there too. Unsurprisingly considering his proven organisation skills, his effective control over subordinates, and his popularity in the Ba'ath, they appointed Hafez al-Assad the commander of the first such unit: the 3rd Air Brigade, headquartered at Dmeyr AB, and officially the home base of both MiG-17 units.

Considering everything mentioned above, it would be an understatement to say the SyAAF experienced particularly traumatic times during 1963. Over 820 people were killed during what the Ba'ath declared the '8 March Revolution' alone, and more than 200 during the Nasserist counter-coup attempt. Even

afterwards, the Military Committee of the Ba'ath and its allies saw enemies everywhere, and repeatedly purged all the branches of the armed forces. Arbitrary arrest, detention and executions cost the SyAAF at least 20 officers that year alone: they tore apart its unit cohesion, severely interrupting the training and maintenance syllabus, and completely destroying its fighting capabilities. Not only would it take months for the situation to stabilise sufficiently and the service to return to routine operations, but it was to last even longer until its officers were forced to realise that the business of the armed forces was not to meddle in politics and plot coups, but to train for a confrontation with Israel.

SLOW BUILD-UP

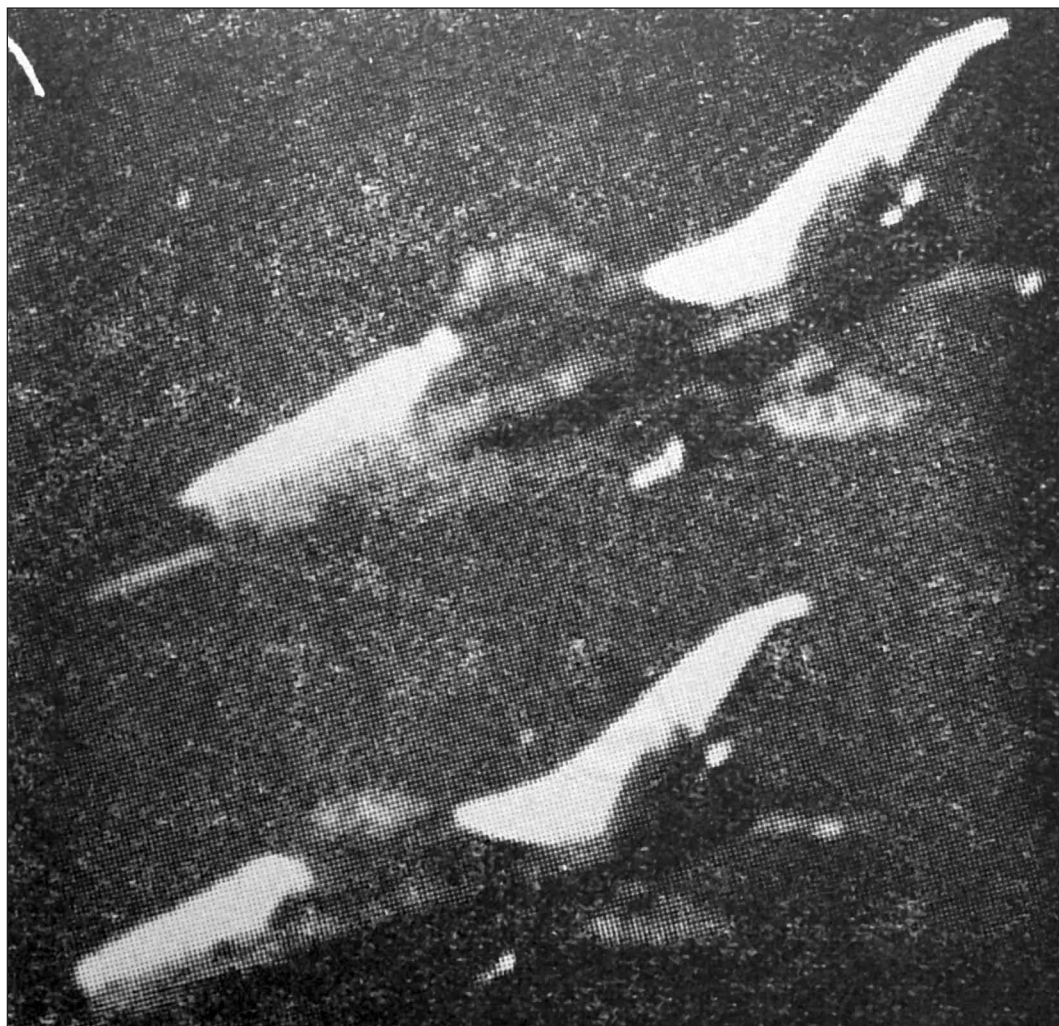
Regardless of circumstances, those Syrian officers professional enough not to become involved in any of the coups or counter-coups did continue their training. This was primarily true for the group of pilots sent to the USSR for conversion training on MiG-21F-13s, which included Abdullah Alaji, Ali Antar, Ismail Atrash, Sabri Bilal, Mohi ad-Din Dawood, Khalid Marwan Zain ed-Dien, Adnan Ahmad Hussain, Ahmad Adnan Yousef Nablsy, and Naseh Khalid al-Olwany: Bilal was the first of them to solo on the type, in late 1962. Like the Egyptians, they had good recollections of their early experiences on the type:

I was really impressed by this aircraft. The MiG-21 was small, simple, and very easy to fly. Cockpit noise was very low at high speeds, and it flew smoothly. I truly loved to fly it...Although the engine accelerated extremely slowly, and it took time to climb, it was easy to reach the speed of March 2.05 at altitude....Once airborne, I did not want to come down. It was reliable and easy to maintain. Our ground crews swiftly learned to turn it around in 20 minutes...²

The first nine MiG-21F-13s were delivered by ship to the port of Latakia in late June 1963. When their pilots and ground personnel returned from training in the Soviet Union, they entered service with Nos. 5 and 9 Squadrons – commanded by Majors ed-Dien and al-Olwany, respectively, and both subordinated to the newly established Air Brigade 7 – and eight of them took part in the military parade staged in Damascus on 22 July of the same year. However, subsequent deliveries and thus the build-up of the fleet

developed slower than originally planned: 30 MiG-21F-13s were in service by the end of 1963 – by when the second group of SyAAF pilots was undergoing conversion training to this type in the USSR – and another 20 arrived the following year. The brigade was thus complemented through the establishment of its own air defence unit, the 725th Air Defence Regiment, equipped entirely with anti-aircraft artillery.³

Except for Air Brigade 7, the rest of the SyAAF's flying assets were effectively under the control of the Assad-commanded Air Brigade 3. As of 1963-1964, the centrepiece of this unit was still the MiG-17 equipped No. 30 Squadron, home based at Dmeyr. Shaken by repeated purges, the unit was barely able to keep about 20 of its jets operational at any time and had only 30 qualified pilots. Furthermore, Assad's brigade also controlled No. 40 Flight: home based at Rasin el-Aboud – a disused airfield left behind from the times of the French Mandate, but expanded through addition of a 2,500m long asphalted runway and after losing one of its jets during an operational sortie in 1962, No. 40 Flight flew the remaining three Il-28Rs. The transport fleet was organised into No. 60 Flight (also controlled by HQ Air Brigade 3), which flew seven Il-14s and one C-47. In July 1964, this unit was expanded to a full squadron through the acquisition of five Il-14s from the East German airline Interflug, followed by four more in 1966. Finally,



Photographs of early Syrian MiG-21s remain extremely rare. This one shows a pair of MiG-21F-13s of Air Brigade 7 in around 1964-1965. Notably, rudders and wing-tips of both aircraft are nearly invisible against the background, indicating the application of the red colour, as agreed by the UAC in 1964. Also visible are traces of the application of red colour in form of a thick stripe around the intake on the nearer aircraft, and in the form of a thin stripe on the MiG-21 in the background. Both were equipped with launch rails for R-3S missiles when photographed. (David Nicolle Collection)

Table 2: SyAAF, ORBAT, 1963-1966 ⁵				
Brigade	Subunits	Base	Equipment	Notes
Air Brigade 3	No. 8 Flight	Mezzeh AB	6 Mi-1, 5 Mi-4	
	No. 30 Squadron	Dmeyr AB	40 MiG-17F, 2-3 MiG-15UTI	formerly No. 101 Squadron UARAF
	No. 40 Flight	Rasin el-Aboud AB	3 Il-28R	
	No. 60 Flight	Mezzeh AB	7 Il-14, 1 C-47	
Air Brigade 4	-	Mezzeh AB		logistics and supply element
	42nd Air Defence Regiment	Mezzeh AB		
Air Brigade 7	No. 5 Squadron	Dmeyr AB	MiG-21F-13	
	No. 9 Squadron	Dmeyr AB	MiG-21F-13	
	725th Air Defence Regiment	Dmeyr AB		
Air Force Academy	Basic Flight School	Kweres AB	Chipmunk T.Mk 50	
	Advanced Flight School	Kweres AB	Spitfire, Meteor, MiG-15UTI	
	Jet Flight School	Kweres AB	L-29	

No. 8 flight operated six Mi-1s and five Mi-4s, all of which were delivered in 1958.

After successfully explaining the poor state of his service to the Military Committee in Damascus, in 1964, Major-General Dakkr was granted permission to launch the acquisition of additional aircraft. Accompanied by Colonel (and British-trained aircraft-engineer) Muhammad Assad Moukiiad, the commander of Air Brigade 4 – the logistics and supply element of the SyAAF – Dakkr first travelled to Moscow in attempt to secure accelerated deliveries of MiG-21s, MiG-15UTI two-seat conversion trainers, and additional MiG-17s and Il-28s. However, the Soviets had little sympathy for an officer renowned as fiercely anti-communist, and another trained in Great Britain. Moreover, Moscow had meanwhile reorganised the entire aircraft production of

the Warsaw Pact: correspondingly, it concentrated on development and production of combat aircraft, while training aircraft were henceforth to be manufactured in Czechoslovakia. Ultimately, Dakkr and Moukiiad thus found themselves in Prague, negotiating for the acquisition of the then brand-new Czechoslovak-made Aero L-29 Delfin two-seat training jet. The related contract from 1964 envisaged deliveries of 77 such aircraft, and training in Czechoslovakia of 18 Syrian pilots to become pilot-instructors. Furthermore, a group of Czechoslovak advisors was sent to Syria, to train additional pilots there. The first two deliveries of L-29s in 1964 and 1965, comprised a total of 20 aircraft and 12 spare engines. The SyAAF thus became the first non-European export customer and one of the largest overseas operators of this type.⁴

PROPAGANDA WARS⁷

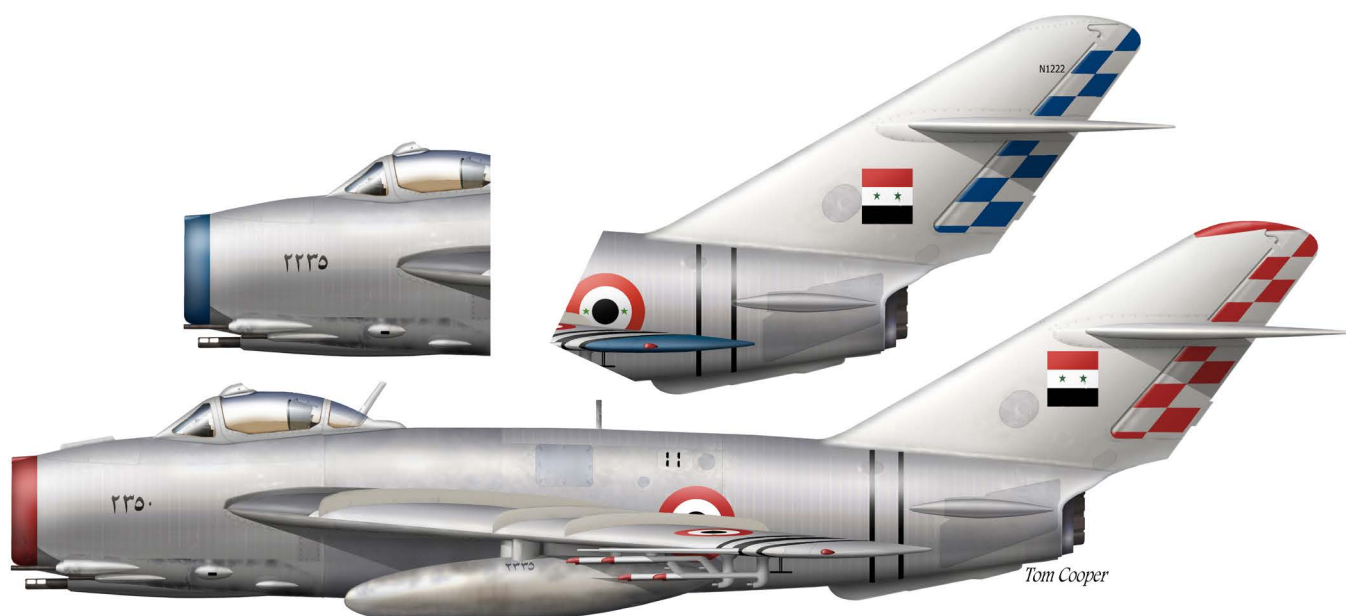
The failure of the Nasserist coup attempt of 18 July 1963 ended the influence of that group of Syrians in the local civilian and military administration and established the Military Committee of the Ba'ath Party as the sole power centre of the country. Although Nasser was still popular with much of the Syrian public, relations between Cairo and Damascus soured, and this did not get better when UAR media began issuing broadcasts in which the Ba'athists were denounced as 'murderers' and 'fascists'. Seeking for ways to firm its control over the country and gain in popularity, the Military Committee not only countered in fashion vis-à-vis Nasser, but also thundered about Israeli provocations along the armistice lines and de-militarised zones (DMZs) on the Golan Heights, in June-August 1963. The pattern of the latter was relatively simple: while bitterly complaining about 'crazy Syrians', that were 'shelling peaceful settlements and farmers', the IDF repeatedly



Mohammad Assad Moukiiad (centre), a highly educated and experienced technical officer and commander of Air Brigade 4, SyAAF, played an important role in all negotiations related to arms-acquisitions with the USSR and Czechoslovakia starting in 1964, and well into the 1980s. At the same time, he played an important role in directing the future of the Syrian Air airline. (Mohammad Assad Moukiiad Collection)



While retaining their 'silver grey' overall livery, many of the MiG-17Fs operated by the UARAF through the mid-1960s also retained their gaudy decorations applied in the 1958-1961 period. This jet, serial number 2402, photographed by the crew of a RAF-operated reconnaissance aircraft over the Red Sea in 1965, was decorated with the insignia of the UARAF aerobatic team – consisting of a yellow bolt with six dark blue or black stars – and had a chequerboard in red applied on the fin. By 1965, it also received two launch rails for Sakr rockets under each wing: this illustration shows both the 76mm and 88mm variants. (Artwork by Tom Cooper)



Another of the MiG-17Fs flown by the UARAF aerobatic team was this example, serial number 2350. Subsequently operated by No. 18 Squadron, it was several times photographed at the el-Arish AB, in 1965 and 1966, before being destroyed – still at the same base, on the ground – during the Israeli onslaught of 5 June 1967. The insets show details of MiG-17F 2235, another former mount of the aerobatic team, and also destroyed at el-Arish AB on the morning of 5 June 1967. Like the other jets of No. 18 Squadron, both were equipped with launchers for Sakr rockets. (Artworks by Tom Cooper)



This is a reconstruction of one of the ex-Iraqi MiG-19S operated by No. 20 'Araba' Squadron as of the 1964-1967 period. The jet retained its overall 'air superiority grey' satin mid-grey colour and had the national insignia applied in the usual positions (including six roundels and the fin-flash), but the roundel on the rear fuselage was slightly smaller and further to the rear than usual. Ex-Iraqi MiG-19S are known to have worn names of major Arab cities applied in white below the cockpit: the example here was named 'Casablanca'. It is only very recently that the newest photographs indicate a possible application of a standard, four-digit serial number, almost certainly in 31xx sequence. (Artwork by Tom Cooper)



MiG-21F-13s of the UARAF were all delivered painted in 'silver grey' overall: this 'colour' actually consisted of two layers of clear lacquer, mixed with 5 percent and 10 percent aluminium powder, respectively (atop of a varnish layer). It gave them a relatively dark, but also highly polished appearance, through which the different colours of various panels was clearly visible: darker areas were usually made of steel, and the lighter of aluminium. The first batch of MiG-21F-13s in Egypt received serials in the range 50xx (shown is serial number 5001), and IFF-antennae at the centre of the spin: the latter were necessary because they were planned to become integrated into the IADS, and thus had to be recognisable as 'friendly' by operators of SA-2 SAM-systems. (Artwork by Tom Cooper)



The second batch of MiG-21F-13s delivered to Egypt received serials in the range 51xx. Like all earlier MiGs delivered to Egypt, they retained the silver grey livery, but received identification stripes in black: always two around the rear fuselage, and three around the wing-tips (of which the centre was at least twice as thick as the outboard stripes). Unlike MiG-15s, MiG-17s, and MiG-19s, UARAF MiG-21F-13s never received any kind of insignia other than the national markings: the latter consisted of roundels in six positions and the fin-flash (applied on either side of the fin). (Artwork by Tom Cooper)



Through 1966-1967, UARAF received the third batch of MiG-21F-13s, which received serials in the range 52xx. This probably brought the total number of aircraft of this variant to reach Egypt to more than the originally ordered 48: nevertheless, only three units are known to have operated them: Nos. 45, 47, and 49 Squadrons, the first of which also became the only home based at Meliz AB, in northern central Sinai, in 1966. Principal armament remained the same as before and after, and consisted of a pair of R-3S infra-red homing air-to-air missiles, and a single 30mm cannon installed low below the cockpit. (Artwork by Tom Cooper)



Designed for operations at high speeds and high altitudes, early MiG-21 variants – including MiG-21F-13s and MiG-21FLs delivered to the UARAF – originally received a corresponding emergency escape system for the pilot: the entire cockpit hood was connected to the top of the ejection seat. As the latter was powered upwards with help of rocket motors, it would pull the cockpit hood upwards to create a 'windbreak', protecting the pilot from the slipstream. Combined, the cockpit hood and ejection seat created an 'emergency capsule' that was accelerated above and beyond the aircraft, and stabilised with the help of a small para-brake. Once the capsule reached a safe altitude, the cockpit canopy would separate and the pilot was released from the seat, to descend under the parachute. On the negative side, while still intact and in the usual position, the armoured windshield and the heavy canopy severely restricted forward visibility from the cockpit. (Artwork by Tom Cooper)



Deliveries of MiG-21FLs to the UARAF were slow and interrupted early, after only about 24 aircraft were handed over – and then the Soviets began delivering MiG-21PFMs 'instead'. Correspondingly, Egypt never received the originally ordered 48 aircraft of the former variant. Like MiG-21F-13s before them, UARAF MiG-21FLs were left in 'silver grey' overall livery, received black identification stripes around the rear fuselage and wing tips. The 30mm cannon was removed from this variant, leaving it armed with two R-3S missiles only: instead, the version received a radar, which in turn meant that in Egypt it was primarily deployed as a night- and bad-weather interceptor. Known serials were in the range 52xx. (Artwork by Tom Cooper)



Outwardly, the MiG-21PFM differed very little, except for the installation of the new KM ejection seat under a sideward-hinged canopy, the construction of which was thus greatly simplified. As usual for the time, all were painted in 'silver grey' overall: the only available photographs (actually stills from cine-film) indicate the possible application of an 'anti-glare panel', in black, in front of the cockpit. National markings and identification stripes were applied in their standard positions, while known serials were in the 54xx range. (Artwork by Tom Cooper)



The first batch of – according to unofficial Russian sources – up to 27 Tu-16 medium bombers delivered to the UARAF in late 1962 and summer 1963, was left in 'silver grey' overall livery. Perhaps because they were almost exclusively flown by Soviet crews during their first years of service with Air Group 65, they also retained their 'borts': large, two-digit serials applied in red colour on the forward fuselage. This example, '12' had its bort applied directly behind the bombardier/navigator's position: more often, the bort was positioned further down the fuselage, as shown inset. Egyptian additions included the application of the full, four-digit UARAF serial (in the range 40xx) in black, with the first digit always separated from the rest of the serial by the roundel. The serial and roundels were applied in similar fashion on the upper surfaces of the right- and undersurfaces of the left wing. (Artwork by Tom Cooper)



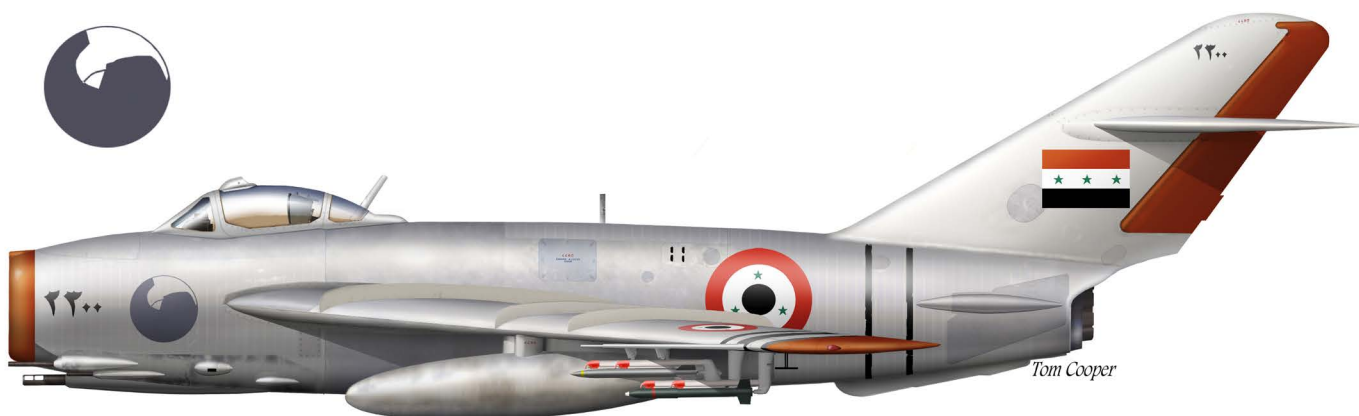
While the number of operational Tu-16s decreased to 21 over the following years, in late 1965 the fleet of Air Group 65 was reinforced through the addition of six Tu-16K missile carriers, equipped with KS-1 (ASSC/NATO-codename 'AS-1 Kelt') anti-ship missiles. The purpose of No. 95 Squadron operating them was to support the Egyptian Navy. While retaining the silver grey overall livery, and – usually – their 'borts' left behind from when these jets were operated by the Soviet Naval Aviation, these jets received serials in the range 41xx (shown is 4117). Notably, like Tu-16s, they also usually wore the last four of their construction number, applied in blue below the cockpit. As far as is known, KS-1 missiles were painted in light admiralty grey overall, with their radomes in a slightly darker shade of light blue-grey, and dielectric cones on the fin-tip in red. (Artwork by Tom Cooper)



Much expected – and demanded by Cairo – for years, the first Su-7BMKs reached the UARAF only in early 1967. All were painted in 'silver grey' overall, and – except for national markings in the usual positions – received no other insignia but their four-digit serials, in ranges 70xx and 71xx. Notably, all of them lacked rear-view mirrors atop of the cockpit transparency, and had only one hardpoint per wing. Principal armament consisted of 80mm S-3K rockets, installed on a seven-round launcher under each hardpoint (the launcher under the centreline is shown in only partially loaded condition). This weapon proved a complete failure: although extensively tested, and deployed in combat during the June 1967 War, these were eventually abandoned and replaced by 57mm S-5 rockets fired from UB-16-57 pods. (Artwork by Tom Cooper)



A reconstruction of the MiG-17F serial number 966 of Air Brigade 3, SyAAF, from the time before the UAC issued a directive for all combat aircraft to have large parts of their noses, wing- and fin-tips painted in red. This aircraft was originally acquired by Syria in 1957 and, contrary to most SyAAF MiGs from that time, remained in the country during the times of the UAR. Following Egyptian standards, it received black identification stripes on the rear fuselage and around wing-tips while operated by No. 101 Squadron, UARAF – and then retained these when this unit became the centrepiece of the re-established SyAAF in September 1961. In the meantime, it also received the insignia in the form of a roaring wolf, in black, with some details in red and yellow. (Artwork by Tom Cooper)



The UAC's directive for all combat aircraft of Arab air forces neighbouring Israel to have large parts of the front, wing- and fin-tips painted in red, certainly resulted in some of the most colourful markings ever applied on any of jets operated by the Arabs. This MiG-17F of Air Brigade 3 is shown as seen during a parade over Damascus in 1963, and then again at Mezzeh AB in early June 1967. Gauging by its serial 2200, and launch rails for Sakr rockets, it was another of the former mounts of No. 101 Squadron, reorganised as No. 30 Squadron once that unit became the backbone of the re-established SyAAF in late 1961. (Artwork by Tom Cooper)



A reconstruction of two SyAAF MiG-21F-13s – serials 405 and 412 (also shown on the cover of this volume) – as of around 1965-1966, after both had their intakes, rudders, and fin-tips painted in red – following the UAC directive. Notably, with the service entry of MiG-21F-13s, the SyAAF introduced the practice of applying no roundels on the fuselage of its combat aircraft: these were worn on upper and lower wing surfaces only. Serials of the first 34 Syrian MiG-21s remain unconfirmed by photographic evidence, but latest reports from Syrian sources indicate that they were in the range 4xx. Their standard armament consisted of two R-3S missiles, and the internal 30mm gun. They were operated by Nos 5 and 7 Squadrons of the Air Brigade 7. (Artworks by Tom Cooper)



This MiG-17F pilot of No. 101 Squadron, UARAF is shown as dressed around 1958-1961. As well as his leather helmet with rubber pads, earphones and classic pilot goggles made of rubber, he wore a flight suit consisting of a long-sleeve-jacket, and trousers in light khaki colour. Abdomen and legs were covered with the PPK-1 partial g-suit, the lower edges of which were frequently squeezed into the flight boots made of smooth black leather. Notable are his pistol-holster, worn around the shoulder, and the breathing mask. (Artwork by Renato Dalmaso)

IL-28 and Tu-16 crews of the UARAF during the first half of the 1960s used to wear flight overalls in light khaki, with zipper on the front, and completed by a canvas belt. Atop this, they wore leather flight jackets of unique design and unknown origin: made of full-grain leather, these had a narrow fur collar, shoulder pads in smooth leather, and zipper and two studs at the bottom. Appearing similar to those worn by MiG-17 pilots of the same time, their helmets were made of canvas and included rubber pads. Gauging by available photographs, they rarely wore boots. Around 1965, the jacket shown here was replaced with a model made entirely in smooth leather, and a wider fur collar, and the wearing of smooth black leather flight boots became more common. (Artwork by Renato Dalmaso)



MiG-19 pilots of the UARAF, followed by MiG-21F-13 pilots, came back from their conversion training in the USSR wearing VKK-3 partial pressure suits and GSh-4 high-altitude helmets – the combination of which was known as KKO-3. The suit was a simple design made of canvas, with an H-shaped tube starting at the abdomen and travelling down each leg and arm. The GSh-4 helmet was made of aluminium, and included its own tube for oxygen supply, a communication system, and included a downwards sliding visor and a detachable front transparency, as illustrated here. Leather gloves and flight boots were the same as issued to pilots operating other types. (Artwork by Renato Dalmaso)



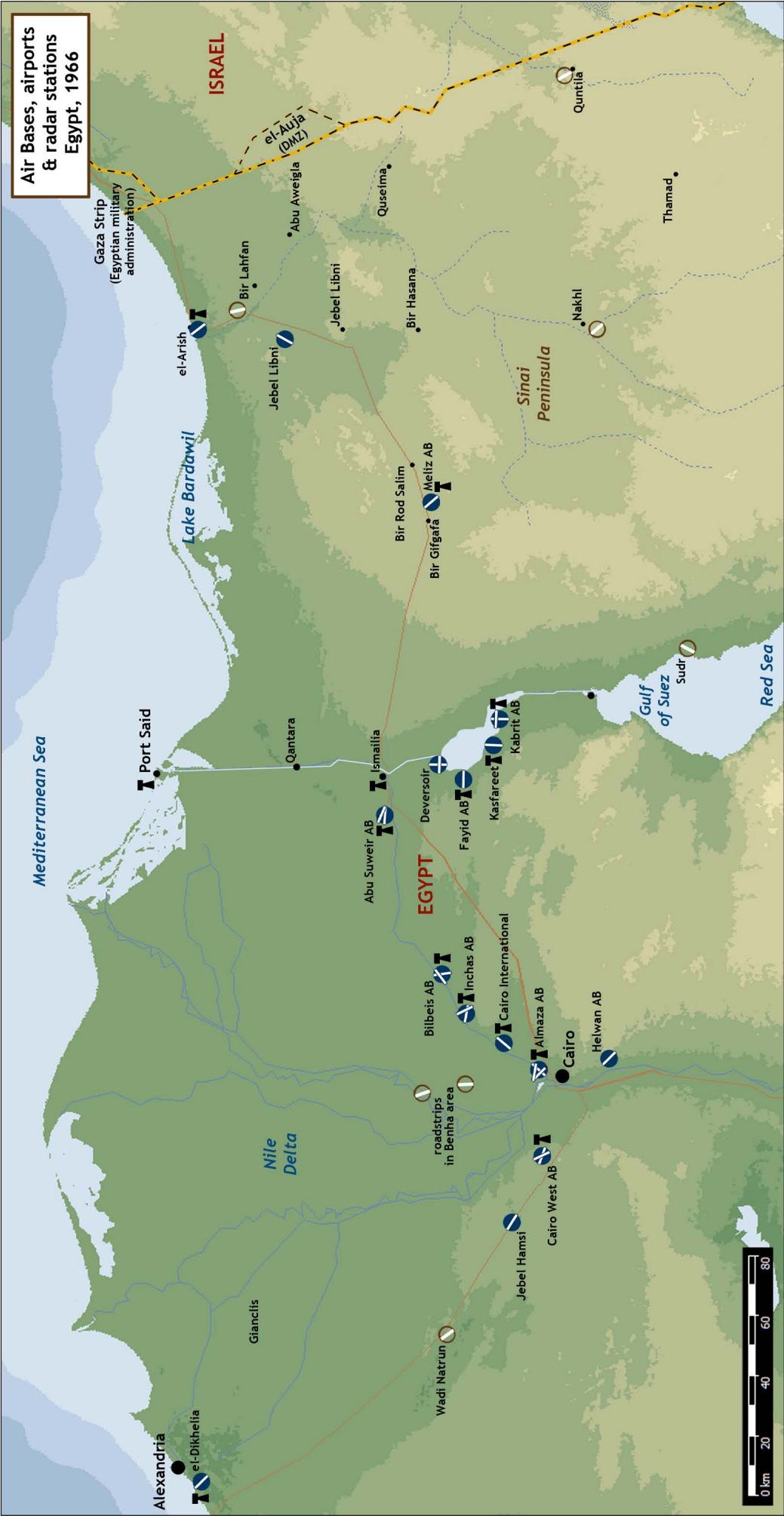
A rare close-up view of a MiG-17F serial 966, of Air Brigade 3, SyAAF, as of the mid-1960s. Notable is not only the (unusual) application of all three digits of the serial on the nose but also the unit insignia in form of a roaring wolf. (via R. S.)



This zoom-in on a portion of the cover photograph of this volume, shows two MiG-17Fs of the SyAAF as of early June 1967 at Mezzeh AB, on western outskirts of Damascus (indeed, the future Presidential Palace was constructed on the hill visible in the background right, a few years later). In addition to their intakes, wing-tips and rudders painted in red, clearly visible are IFF-antennae on the top of the centre fuselage, and ex-Egyptian serials 2200 (left) and 2025: the latter and their black identification stripes identify these aircraft as former mounts of No. 101 Squadron, UARAF, from the 1958-1961 period. (David Nicolle Collection)



Colour photographs of early Egyptian Tu-16s are extremely rare. This one was taken during a power-projection exercise and shows an unidentified example (its 'bort' was removed from the forward fuselage by the Egyptian military censor) with its bomb-bay still open, seconds after it released its bombload. Except that the aircraft was left in 'silver grey' overall, the only other visible details are the national insignia on the rear fuselage and fin. (Pit Weinert Collection)



A map of major air bases and other airports and dirt strips, and of major radar stations of lower Egypt as of 1966. Except for adding a radar station installed at the disused Gamil airfield, west of Port Said, and two new air bases on Sinai – including Meliz and Jebel Libni – relatively little has changed in comparison to 1956: after the June 1967 War with Israel, this failure to significantly increase the number of available air bases became one of the primary points of critique of Air Marshal Mahmud Sidqi Mahmud's way of commanding the air force during the 1960s. (Map by Tom Cooper)

5TH TRAINING CENTRE

The facilities in which the second generation of Egyptian MiG-21 pilots and the first generation of Syrian MiG-21 pilots underwent their conversion training to this type, in 1962-1963, was significantly different than the one where the first groups of Iraqi and Egyptians underwent the same process, only one or two years earlier. However, in its new shape, it became common for more than a dozen subsequent generations of Arab pilots.

Reacting to increasing demands for basic pilot training and conversion training for the aircraft types that Moscow was now exporting, in 1962 the Soviet Air Force significantly expanded its facilities for the training of foreign pilots. The 5th Training Centre henceforth included a total of five air bases and regiments:

- Frunze-1 AB (714th Regiment)
- Lugovaya AB (715th Regiment)
- Tokmak AB (716th Regiment)
- Kant AB (322nd Regiment)
- Novotroitsk AB (349th Regiment)

Foreign students were distributed according to their qualifications: future helicopter crews were trained by the 714th Regiment; jet conversion training was provided on L-29s and MiG-17s of the 322nd and 716th Regiments, MiG-21 conversion training by the 715th Regiment, while future Il-28-crews were trained by the 716th Regiment.⁶



A group of SyAAF pilots undergoing conversion training to MiG-21F-13s or MiG-21FLs at one of the air bases of the 5th Training Centre in the mid-1960s. (Albert Grandolini Collection)

drove armoured tractors to 'work the soil' inside the DMZs. This was a direct violation of the armistice agreement between Israel and Syria of 1949: at the time, most such zones were occupied by the Syrian Arab Army, which the UN observers convinced to withdraw on the condition that the Israelis would not enter. However, as soon as the construction of the northern prong of the National Water Carrier was complete, the Israelis not only began violating the armistice agreement of 1949, but began occupying the DMZs while declaring them 'off-limits' to Syria. Whenever the Syrians failed to shoot back at Israeli armoured tractors, the Israelis would impose themselves in control and their farmers were left to work there; if the Syrians fired back, they would find themselves confronted with the superior firepower of the IDF, which not only targeted Syrian military positions, but nearby civilian settlements too. With the Syrian Arab Army units usually deployed on the Golan Heights being largely staffed by Arabs and Druze ethnically cleansed from northern Palestine (now Israel), it rarely took much to provoke them into a 'retaliation' – usually in the form of artillery barrages on the nearest Israeli settlements (usually constructed atop Arab and Druze villages destroyed by the IDF in 1947-1948).⁸

UNITED ARAB COMMAND⁹

Bitter complaints from Damascus about the lack of Egyptian reaction to the Israeli provocations in the summer of 1963, and continuous quarrels in Cairo over the June 1963 Arms Deal with Moscow, had multiple consequences. Fully aware that the armed forces of the UAR were not yet ready for a major showdown with Israel, Nasser felt forced to define a joint Arab strategy. Correspondingly, a summit of the Arab League was set up in Cairo for January 1964. However, during the meeting the President of the UAR found himself exposed to fierce accusations of the Syrian representatives about Egyptian 'reluctance for military confrontation with Zionists', and inactivity in reaction to the construction of the NWC and diversion of water from the River Jordan and Lake Tiberias. Nasser reacted by proposing the establishment of a unified military command for defence against Israel. Despite reservations of the Jordanian government, this idea was accepted by all 13 contemporary members of the League. Thus came into being the United Arab Command (UAC), the purpose of which was to audit all the Arab armies in respect of their organisation and equipment, and then to standardise their strategy, tactics, and weaponry, coordinate their planning, and – in the case of a war – their operations.

On Nasser's insistence, the idea for the UAC included the deployment of Arab troops from other states – foremost from Egypt – in Lebanon, Jordan, and Syria. Unsurprisingly considering their poor relations with Nasser, all three governments proved loath to permit this. Still, Nasser did manage to convince them, and the oil-rich Arab countries in the Persian Gulf, to initiate their own projects for the diversion of water to prevent it from reaching Israel: thus came into being the so-called Headwater Diversion Plan, in which two out of three principal sources of the River Jordan – Hasbani and Banians – were to be re-routed. Each of the involved countries was to run its own project: the Lebanese and Jordanian designs did not directly affect the Israeli interests, but the Syrian became a focus of particular attention. While this was as technically difficult, costly, and as barely feasible as the original project form the 1950s, Israel took no chances: the existence of the UAC, and the Syrian element of the Headwater Diversion Plan were declared as an infringement of Israeli sovereign rights, and the IDF was ordered to reinforce its military campaign against the latter.

RED NOSES

The widely-dreamt-about and much demanded (and frequently intentionally misreported) 'Arab unity' thus remained little more than a fantasy. Nevertheless, Field Marshal Amer still found it a good opportunity to get rid of two additional 'troublemakers' within the ranks of the Egyptian generals. Pending elections for the national assembly, held in March 1964, he negotiated with Nasser

the first major shift in years at several levels in the chain of command of the armed forces: in exchange for giving up his post as Minister of War and the Chief-of-Staff Armed Forces – and his replacement by Generals Shams Badran and Mohammed Fawzy, respectively – Amer was appointed the Vice President of the UAR. Of course, even so, he kept his fingers in everyday operations, frequently overruling not only Badran and Fawzy, but also all the commanders below their level, and continued micromanaging the armed forces and the promotion of all officers. Thus, Amer appointed Lieutenant-General Ali Ali Amer as the Commander of the UAC, and then ordered Major-General Riyadh to another training course – de-facto sending both of them into exile.

Neither Ali Ali Amer, nor Riyadh were keen to sit on their hands – and, certainly enough, Nasser was willing to give the idea of the UAC another try. Correspondingly, another summit of the



Shalaby el-Hinnawy (centre, with dark hat) in the course of his visit to Jordan, while auditing the RJAF, in mid-1964. (David Nicolle Collection)



An ex-Interflug Il-14, wearing Syrian national markings, the serial number 1126, and with its nose-tip and rudder painted in red in accordance with the UAC directive from 1964. Seen at an airport outside East Berlin prior to delivery-flight to Syria. (Albert Grandolini Collection)

Arab League was set up in Alexandria in September 1964. By then, Ali Ali Amer took care to have his staff reinforced with the highly experienced and methodically-working Shalaby el-Hinnawy. Appointed the Head of the Air Defence Department UAC, and always energetic, el-Hinnawy worked fast: he appointed a Syrian officer as the Head of the Planning Branch UAC, another Syrian as the Head Air Operations UAC, and an Iraqi officer as the Head Air Defence Branch UAC. After auditing all the air forces neighbouring Israel, they not only recognised the weaknesses of the Jordanian and Syrian services in particular but recommended the deployment of a UARAF unit equipped with MiG-17s and another with MiG-21s to Syria. Moreover, by early 1965, they developed a plan for a joint air defence strategy, which distributed the airspace over Israel into several sectors, as follows:

- UARAF was responsible for the area south of the line Tel Aviv – Jerusalem
- IrAF and RJAF were responsible for the area north of the line Tel Aviv – Jerusalem
- SyAAF and the FAL were responsible for the area north of the line connecting Haifa, Jenin, and the Lake Tiberias

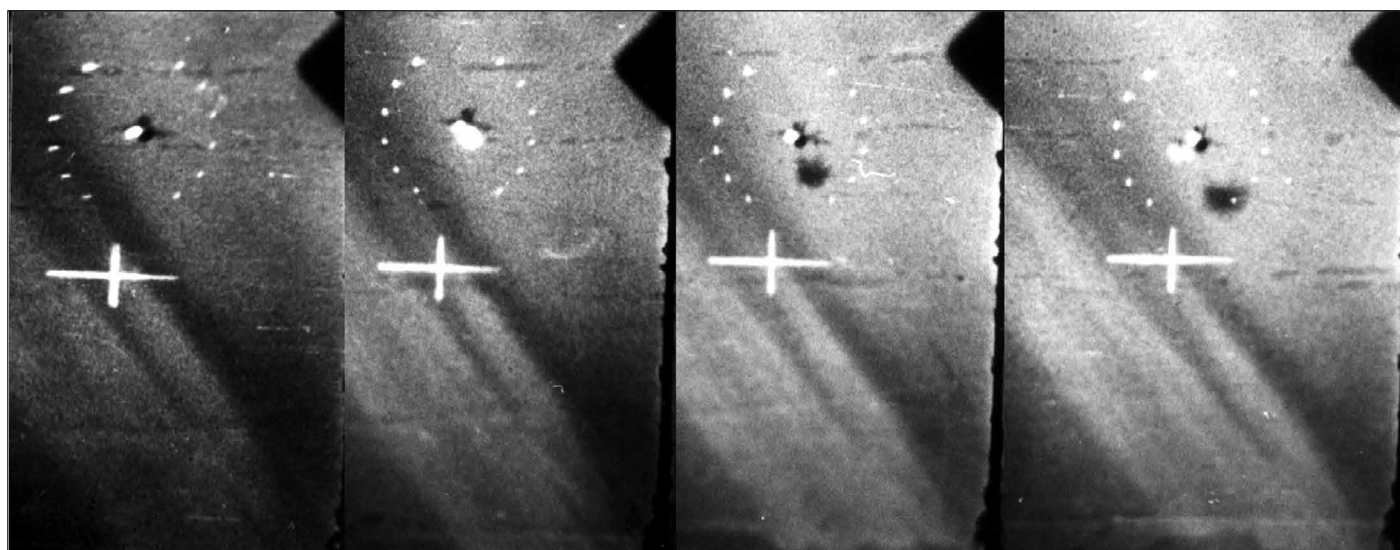
The staff of the UAC was to have nothing of this: mutual suspicion between top political leaders in Cairo, Amman, Beirut and Damascus in particular, resulted in non-Egyptian governments mistrusting Nasser's intentions. With Nasser and the local governments remaining preoccupied fighting propaganda wars against each other, both the Jordanians and Syrians flatly refused all such offers and requests. Therefore, the sole actual result of the establishment of the UAC was that the Lebanese and Syrian air forces painted most of the noses, wing tips, and fins of their aircraft in red: this was a measure for easy identification proposed by Hinnawy in the event that their aircraft and the aircraft of the UARAF met in the skies over Israel.¹⁰

DAN INCIDENT

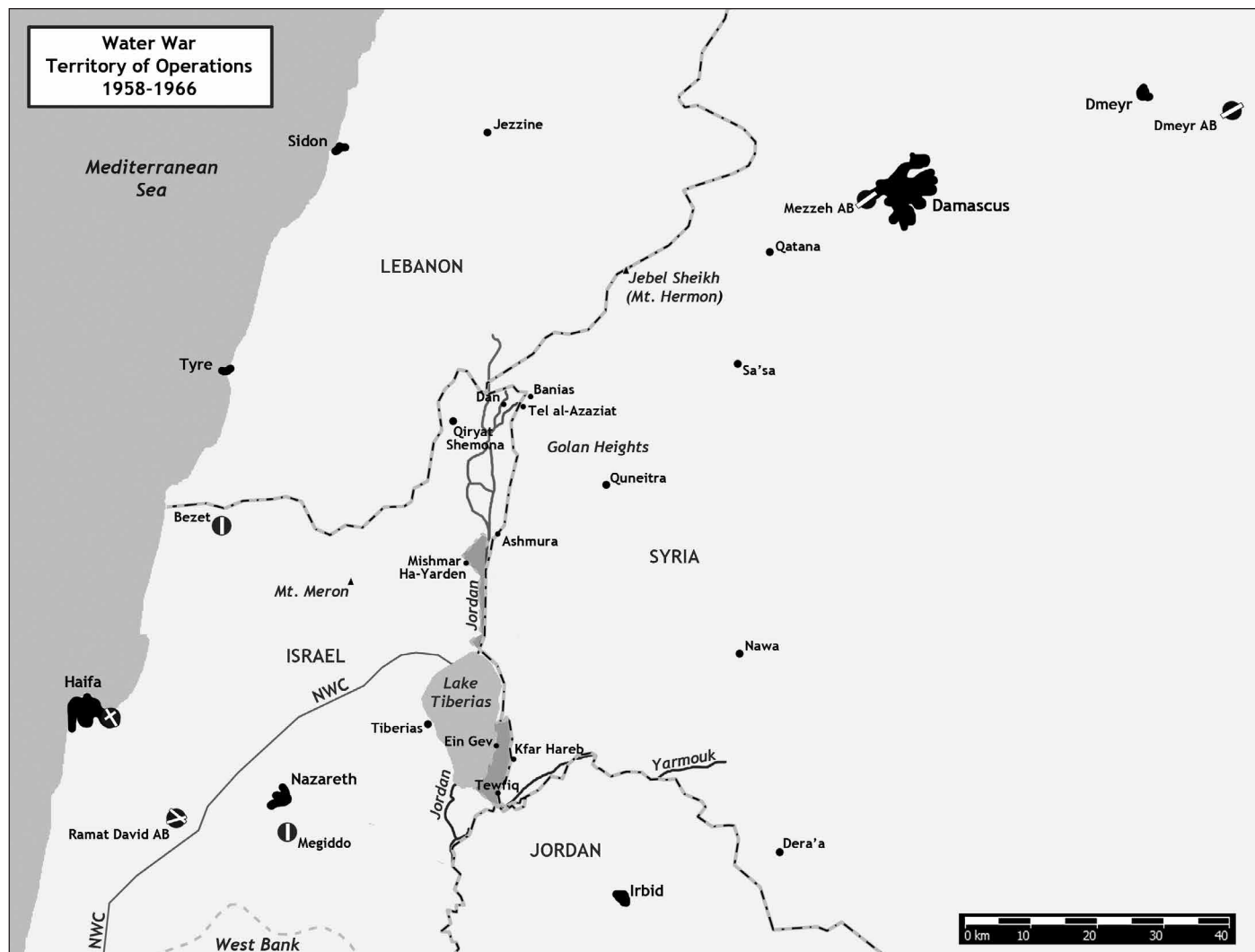
With Damascus refusing to accept the Egyptian help, the Syrian armed forces were left with no option but to face a superior opponent entirely on their own. Indeed, as the fighting capabilities of the IDF/AF grew through the introduction to service of the Mirage IIICJ, and following the appointment of Yitzhak Rabin

to the post of the Chief-of-General Staff IDF, in January 1964, the Israeli armed forces began exercising increasing pressure upon their government for the deployment of air power. This was granted and, on 1 November 1964, acting under what was now a standing authorisation, Rabin ordered the IDF/AF to prepare for an aerial offensive against the construction site of the Syrian irrigation project. Ironically, this was playing into the hands of the Military Committee and the Ba'ath Party in Damascus: considered leftist and anti-Islamic, this was deeply unpopular within the Syrian population, and already facing widespread unrest at home. Combined with the construction of the National Water Carrier, which caused an outright frenzy amid Arab nationalists in Syria and abroad, the Israeli provocations thus offered the Ba'athists a good opportunity to distract public attention and gather Syrians around their flag, even if perfectly aware of the inherent weaknesses of the armed forces. Certainly enough, the Israelis were not to be outdone in this game: always well informed about the poor condition of the Syrian armed forces they could be certain of the IDF's ability to respond with superior firepower.¹¹

On 7 October 1964, the IDF pushed its armoured bulldozers to 'work the soil' inside the southern de-militarised zone (DMZ) along the ceasefire line with Syria. The Syrians opened fire and the Israelis withdrew – only to return in force. On 3 November 1964, the IDF resumed the work on what it called the 'patrol track': a narrow path constructed inside Syria to prevent Syrians from gaining control over the River Dan's underground rivulets and drove armoured tractors into all of the DMZs along the ceasefire line. Aimed to provoke, these actions had the desired effect: furious, the local Syrian commanders responded by shelling the track – and the nearby Kibbutz Dan. Although surprised by the enemy reaction, insisting that the enemy was in possession of major topographical advantage and there would be no other means to respond but air power, Weizmann then ordered the IDF/AF to 'retaliate' with air strikes: deploying more than 80 fighter-bombers, covered by a similar number of sorties flown by interceptors, these hit not only the 'provoking' Syrian artillery positions, but completely demolished the construction site of the irrigation project outside the village of Tewfik (already entirely ruined by Israeli attacks in 1958-1963), killing at least a dozen civilian workers.¹²



A sequence of stills from a gun camera film of an Israeli Mirage IIICJ, showing an attack on a SyAAF MiG-21F-13 on 4 November 1964. Visible is the pipper almost directly on the target, and one or two 30mm hits in the area below the wing. The Syrian jet survived this encounter. (IDF)



The area of operations of the 'Water War' fought between Israel and Syria in 1958-1966. Shaded along the Jordan are two major DMZs following that river, north and south of Lake Tiberias: both were held by the Syrians at the time of the ceasefire from June 1949, then evacuated under UN supervision on condition that neither side would work the land there, nor deploy armed forces. Both were secured by Israel by 1966. Also notable is the disappearance of Lake Hula on the northern edge of the northern DMZ: this was drained by the Israelis from the start of the construction of the NWC in 1951-1952. (Map by Tom Cooper)



An R-3S missile (ASCC/NATO-codename 'AA-2 Atoll') seen installed on the underwing pylon of a MiG-21F-13. The weapon was extremely limited in its performance – even more so when deployed at low altitudes – and proved essentially useless in air combat. (Photo by Sean O'Connor)

The SyAAF failed to react to the Israeli airstrikes. It was only when a Vautour IIBR attempted to fly a reconnaissance sortie over the Golan Heights, a day later, that a pair of MiG-21F-13s was scrambled from Dmeyr. The two jets were still climbing towards their high-flying target, when they came under attack by a pair of Mirage IIICJs from below: the trailing MiG was damaged by cannon fire, but the Syrian wingman then turned around to counterattack and fired both of his R-3Ss: while the SyAAF pilot claimed a kill, it seems that both of his missiles were outpaced by rapidly distancing Mirages. In turn, both Syrian jets returned safely to Dmeyr AB.¹³

NEW STRATEGY

Reactions to the so-called Dan Incident were furious – both in Israel and from Syria. Announcing that their country's survival was dependent upon adequate supply of water, the Israelis warned that any attempts to prevent them from taking their 'fair share' of the River Jordan would be considered tantamount to an attack on their sovereignty. Although shocked by the escalation, the Ba'ath government in Damascus ignored not only the Israeli warning but also the UAC's offers of cooperation and reinforcements. Instead, it continued the construction work on the Headwater Project: by March 1965, a stretch of 15 kilometres was ready.¹⁴

On 17 March 1965, Syrians opened fire on an Israeli patrol underway along the patrol track. Meanwhile having an entire armoured brigade deployed nearby, the IDF promptly responded with withering fire: however, as well as demolishing the position from which the Syrians had fired, the Israelis once again shelled the construction site of the irrigation project. Undaunted, Damascus shipped new equipment and the work continued. Because the Syrian army commanders had now received the strict order to avoid firing in reaction to the Israeli provocations, the IDF initiated the next 'incident' on its own and, on 13 May 1965, provoked the Syrians into another clash, which ended with Israeli tanks driving kilometres deep into Syria to destroy the construction equipment again. Only now did the Ba'ath government in Damascus complain to the Arab League: during the summit held in Casablanca, in Morocco on 26 May 1965, its representatives explained that without the support necessary to

neutralise Israeli air superiority, they could not hope to complete the project. Not intending to risk a war with Israel while about a third of his army was busy fighting in Yemen, Nasser once again offered help via the UAC, but otherwise refused to act.¹⁵

Quiet prevailed for several months – primarily because the Ba'ath Party of Syria was preoccupied with a major power struggle between several of its own factions. On 16 October 1965, in reaction to an attempt by so-called 'Regionalists' to replace favourites of the Military Council with their own officers, Jadid dismissed Major-General Dakker, and appointed Brigadier-General Hafez al-Assad as the Chief-of-Staff SyAAF. Of course, this brought no respite, and the conflict escalated, culminating on 21 February 1966, when Umran – now the Minister of Defence – ordered the transfer of three of Jadid's primary supporters to new positions,



Salah Jadid, wearing the uniform of a Major-General – a rank to which he advanced himself after climbing to power. Even though never imposing himself as the President of the Syrian Arab Republic, he was the actual strongman in Damascus from 1966 until 1970. (via Tom Cooper)



Mohammad Assad Moukiiad (front row, third from left), with Jadid (to the left from Moukiiad), and a group of Egyptian officers from the UAC, seen in 1966. (Mohammad Assad Moukiiad Collection)

while instigating armed mutinies in Homs and Aleppo. Jadid reacted by ordering his supporters into a counterattack. Skilfully aided by Assad, who ordered the SyAAF to conduct a series of air strikes on mutineers, he collapsed the coup, resulting in the death or detention of most of its plotters. Crystallising himself as the new and undisputed strongman of Syria, on 24 February 1966 Jadid appointed his closest aides in position of power: Nureddin al-Atassi as president, Hafez al-Assad as Minister of Defence, and Ahmed Suweidani as the Chief-of-Staff Armed Forces. In turn, and because of his preoccupation with politics, Assad appointed Brigadier-General Mohammad Assad Moukiiad as the 'Assistant Commander' of the SyAAF, to run the air force's everyday operations. Thus came into being what is widely regarded as the 'most radical administration in Syria's history'.¹⁶

The policy of the new Syrian strongman vis-à-vis Israel was even more uncompromising than that of the earlier government: embracing the doctrine of perpetual armed struggle, it aimed to provoke a popular uprising of Arabs in Palestine, which was then expected to be joined by the Arab world. Correspondingly, the government courted al-Fatah – a Palestinian militant organisation – into cooperation, and actively encouraged its combatants to infiltrate Israel, preferably via Lebanon or Jordan. Ironically, this policy played into the hands of the Israeli 'hawks', who – furious about the continuous construction work on the Headwater Project – were searching for a pretext to attack again. Neither was left long in waiting. On 13 July 1966, an IDF patrol ran into a mine set up by Fatah: two soldiers and a civilian were killed. Already in position, the IDF took slightly over 24 hours to retaliate: late in the afternoon of 14 July, Israeli fighter-bombers delivered a massive attack on the construction site of the Syrian irrigation project, on a point about 12 kilometres deep inside Syria. The SyAAF took nearly half an hour to react – primarily because Assad first wanted to make sure the Israelis would not threaten Jadid's rule. Four MiG-21s were scrambled from Dmeyr AB only at 1630hrs, followed by another two, a few minutes later. While approaching the combat zone, the front formation was ambushed by Mirages, and one jet shot down: the pilot ejected safely. The follow-up formation attempted to pursue the withdrawing Israelis, before the ground control ordered them back to base: nevertheless, its pilots claimed two enemy jets as shot down. Ironically, Damascus erupted in celebration, launching bombastic claims in the media. However, after this Israeli attack, Jadid terminated the works on the water diversion project.¹⁷

NEW TACTICS

The Israeli onslaught of 13 July 1966 forced the new strongman in Damascus to abandon the counter-diversion plan: however, it not only increased tensions, but emboldened the Israeli Minister of Defence Moshe Dayan, the Chief-of-General Staff Rabin, and the Chief-of-Staff IDF/AF, Major-General Ezer Weizman, to increase the pressure upon Syria and deploy their air power in an even more aggressive fashion. In turn, Jadid, Assad, and Moukiiad became not only keen to stop all Israeli violations of their airspace, but also to hit back at Israel. Both parties had the opportunity to realise their intentions before long.

With Assad deeply involved in politics, Moukiiad was left on his own in running the SyAAF. However, this is where this highly educated and experienced officer was in his element – even more so considering that Dakkar had already laid solid foundations for the further growth of the air force. Thanks to the Czechoslovak support and acquisition of L-29s, the training of additional pilots



Fayeze Ashraf Khalid Mansour, seen while a young 1st Lieutenant of the SyAAF. As commander of Air Brigade 3 from 1966 until 1970, he went on to become the most famous Syrian fighter jet pilot of the time. (Tom Cooper Collection)

was greatly accelerated: while the Air Force Academy had struggled training about a dozen new fliers a year at earlier times, by the end of 1966 it managed to qualify no fewer than 65 new pilots. With Jadid belonging to the Marxist-wing of the Ba'ath Party, his ideological orientation opened all doors in Moscow – and thus Moukiiad was able to negotiate the purchase of 20 MiG-21FLs and 10 MiG-21UTIs from the USSR in late 1965. In January 1966, he negotiated a deal for 40 Su-7BMKs in Moscow, and secured the delivery of 10 additional MiG-15UTIs from Poland. Obviously, just the increased number of training aircraft made the conversion of new pilots and ground crews to MiG-17Fs and MiG-21s much easier: through 1966, this enabled the new commander of Air Brigade 3, Fayeze Ashraf Khalid Mansour, to gradually increase the number of operational MiG-17Fs to more than 35.¹⁸

An entirely different problem was the issue of tactical training: as of 1964–1965, this was hardly ever conducted, and if, then on Soviet advice, as recalled by a contemporary MiG-21 pilot:

We flew very little, and when, then high and fast. In operations, there was a standing order not to enter the enemy, Jordanian, or Lebanese airspace under any circumstances...Needless to say, this greatly limited our tactical flexibility in comparison to the Israelis, who cared little about the diplomatic finesse. Most often, we found ourselves under sudden attacks by Mirages that approached undetected or were ignored by our ground control...we were busy avoiding being hit rather than fighting the enemy.¹⁹

Certainly enough, until the coup attempt of February 1966, the SyAAF was also preoccupied defending the government in Damascus, just like its squadron commanders and their deputies – officers responsible for tactical training of pilots assigned to their units – were preoccupied protecting their position, prestige and influence. Even in the case of operations against the Israelis, their mindset was defensive, and they preferred holding back their assets for defensive purposes. However, under Moukiiad's command, this – slowly – began to change. It was a group of younger officers led by Mohammad Mansour that initiated a reform of the tactical



Pilots of No. 67 Squadron – the first SyAAF unit to fly MiG-21FLs – with one of their mounts, seen around the time the unit was established, in 1966. (Albert Grandolini Collection)

training syllabus for Syrian MiG-21 pilots: encouraged by their Czechoslovak advisors, recognising the weaknesses of the available ground control equipment – worsened by the fact that the Golan Heights and the Lebanese mountains created a natural barrier that blinded Syrian radars in the western and southern direction – and understanding that the Soviet insistence on flying high and fast was mainly related to safety, rather than efficiency in air combat, they demanded greater tactical flexibility:

They demanded the ground control to only have an advisory function...to inform the pilot about the situation, about potential targets, enemy positions and movements, but the ground controller was to leave the flying and fighting to the pilot.²⁰

To the Soviet advisors and the ‘old guard’ of SyAAF commanders, such argument was almost an anathema, but due to several fierce discussions in squadron ready rooms this topic eventually landed on Moukiiad’s desk. Precise details about his reaction remain unknown, and some unofficial Syrian sources stress that Mohammad Mansour was able to prompt changes only thanks to protection by his brother Fayeze. However, there is no denial that subsequently the second of three brothers from the Mansour family to serve with the SyAAF began developing his own air combat methods, and that many of these were related to flying at very low altitudes:

Initially... we foremost concentrated on improving our skills in maintaining the “secrecy of approach”. We sought to select flight directions that we expected would be poorly observed by the enemy. This led us to start flying at ever lower levels, something unheard of for operations of supersonic fighters of the time... At low-level, the speed of the MiG-21F-13 was limited to Mach

0.98 or 1,090km/h (677mph). We were experiencing severe buffeting if attempting to fly any faster and the engine gulped fuel at alarming rates.²¹

MINI-WAR FOR THE LAKE TIBERIAS

Considering the eagerness of Rabin and Weizmann to continue increasing pressure upon Syria, it is little surprising that the SyAAF got an opportunity to test the next tactics devised by its pilots well before this was originally planned. Early on 14 August 1966, a landing vessel of the IDF patrolling Lake Tiberias (Sea of Galilee in Israel) opened fire at a Syrian fishing boat and then beached on the lake’s eastern shore – once again in clear violation of the ceasefire agreement of 1949. At sunrise, the nearby Syrian army units detected it and took it under fire, injuring several crewmembers. When two fighter-bombers of the IDF/AF passed by, the Syrians stopped shooting, and called the SyAAF for help. Fayeze Mansour hand-picked three of his best MiG-17F pilots and led them into a scramble at 0900hrs. Underway towards the Golan, they received top cover in the form of a pair of MiG-21F-13s led by Mohammad Mansour. All six fighters were underway at a very low-altitude. However, while this enabled them to take the IDF/AF by surprise and thus approach Lake Tiberias entirely undetected, their attack with 57mm S-5 unguided rockets, fired from UB-16-57 pods, ended in a particularly shameful way. All four MiG-17 pilots failed to hit the Israeli vessel even once. In turn, the jet piloted by Ghazi Abdul Kader el-Wazwazi was shot down by Israeli 20mm cannons, and the pilot forced to eject. By the time the remaining five aircraft were on their way back to Damascus, another pair of MiG-21F-13s had launched from Dmeyr AB to provide top cover. Unlike the formations led by the Mansour brothers, this approached the combat zone at medium altitude and unsurprisingly it was ambushed by several Mirages scrambled in response to the Syrian attack, and lost one jet

MOHAMMED MANSOUR: THE SYRIAN WHO INVENTED THE COBRA – OR ZERO-SPEED MANOEUVRE

Since the early 1990s, videos and stories of the ‘Pugatchov Cobra’ – a ‘dramatic and demanding manoeuvre’ – have made circles in the media. The manoeuvre is usually flown by Russian pilots in different variants of the Sukhoi Su-27 family of fighter jets. Supposedly developed by Russians, it is an impressive trick, demonstrating the aircraft’s fantastic manoeuvrability. In professional circles, discussions about its potential use in air combat are at least as endless: theoretically, an aircraft flying the ‘Pugatchov Cobra’ could suddenly decrease speed and thus force any pursuer to overshoot, i.e. fly in front. However, nobody knows the background of this manoeuvre, nor who really flew it for the first time, how, when, where, or why.²⁵

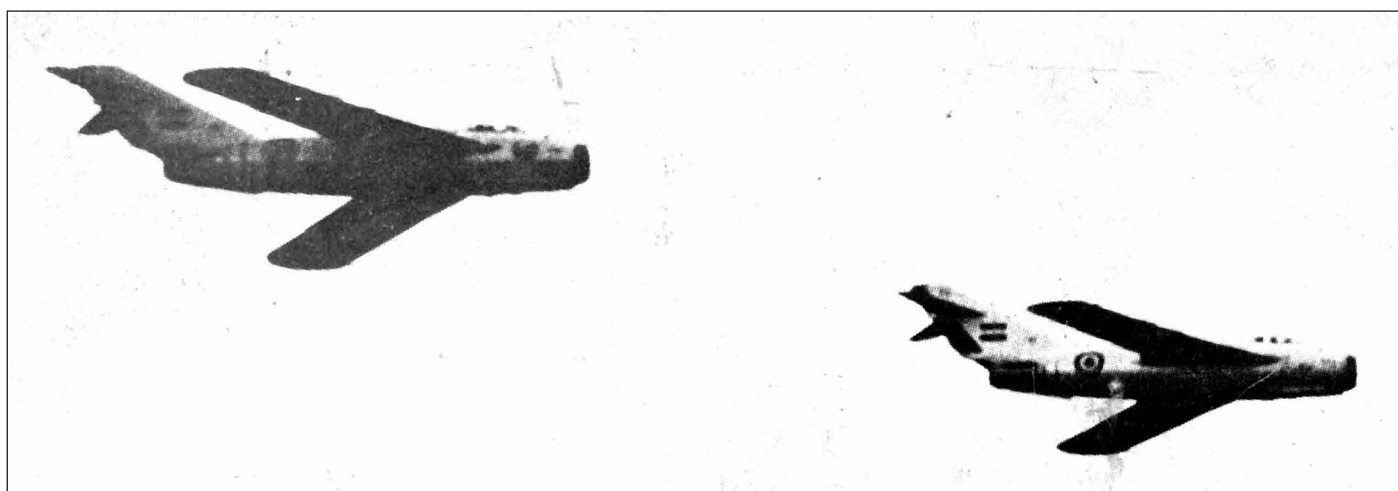
As described earlier, when the SyAAF was re-established upon the dissolution of the UAR in late 1961, and early during its acquisition of MiG-21s, its pilots were over-reliant on the advice of about 30 Soviet advisors assigned to help them work up their new mounts. As usual for the time, the Soviets taught the Syrians to fly high and fast. Experience from clashes with the Israelis in 1963-1965, gradually taught the SyAAF MiG-21 pilots that the Soviet advice was unrealistic, much too conservative, and that it lacked an effective defensive manoeuvre: one that would spoil cannon attacks by Israeli Mirages. One should keep in mind that as of the mid-1960s, there were next to no effective air-to-air missiles, and guns were still the primary armament of all fighters. Thus, air combats were still fought by fighters that attempted to reach a favourable position behind each other, and rarely beyond ranges of 150-200 metres. Whoever was in front was at disadvantage and it was imperative to force the enemy to miss or overshoot.

Born in Damascus in 1942, as the second son of a wealthy merchant named Khalil Mansour, Mohammad originally studied the law in Damascus before joining the Air Force Academy in 1961. After graduating in 1963, he was sent to the USSR for conversion training on MiG-21F-13s. Although



Mohammad Mansour, early during his career, seen wearing the VKK-4 full-body anti-g-suit. (Tom Cooper Collection)

a Sunni Muslim serving in armed forces that were already dominated by Alawites, he fared well during all the turbulence in Syria in the following years: apparently, Mohammad had no interest in politics, but only in flying. By 1966, he established himself as the top tactician in Air Brigade 7. After developing the tactics of ‘secret approach’ at low-altitude, he concentrated on developing manoeuvres to avoid gun-attacks by Israeli interceptors. Initially working with the help of such Soviet manuals as the earlier-mentioned *Manual on the Techniques of Piloting and Military Use of the MiG-21*, he ran a series of test-



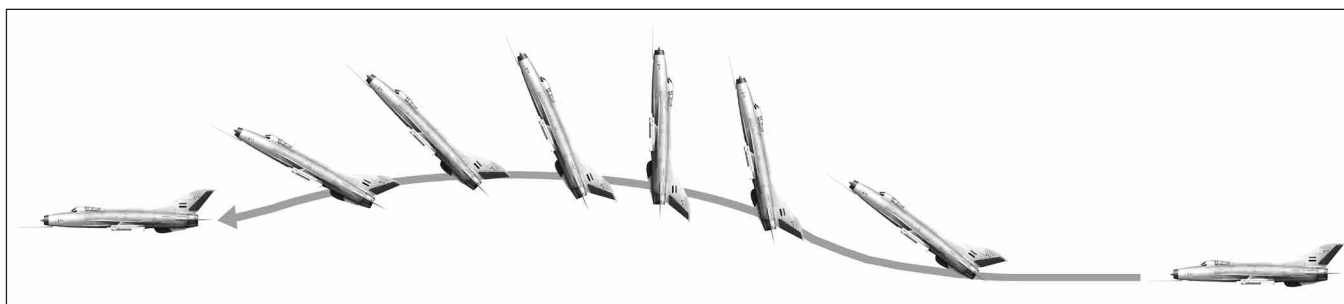
A pair of MiG-17Fs from Air Brigade 3, SyAAF, seen at low-altitude over Damascus, during a military parade staged in July 1966. Notably, the rudders of both aircraft are dark, indicating the application of red colour for easier identification, following the UAC directive. Both aircraft were still wearing their black identification stripes around the rear fuselage – from when they were operated by the UARAF in 1958-1961. Both have received some kind of unknown insignia below their cockpits and have their serials applied between that insignia and the intake. Most likely, the serial of the lead aircraft was 2018 or 2218, indicating the aircraft was originally purchased by Egypt. (David Nicolle Collection)

flights starting with rapid descending turns, followed by sudden activation of the afterburner and climb. In the course of one such sortie, Mohammed inadvertently pitched the nose of his MiG-21 too hard. With the jet's big delta acting as an air brake, all the forward movement promptly stopped: because the pilot engaged the afterburner, the MiG ended 'standing on its tail', nose pointing almost vertically into the sky, on the verge of flipping out of control. Although Mohammed regained control in time to prevent a crash, it was a close-call – though one that generated the idea: keeping in mind the notoriously slow reaction to throttle movement of the R11 engine, he decided to next time try engaging the afterburner before pitching the nose of the jet upwards. This was the moment in which what later became known as the 'Zero-Speed Manoeuvre', and, much later, the 'Pugachov Cobra', was born.

As far as is known, Mohammed went on to become the most successful Arab fighter-pilot of the June 1967 Arab-Israeli War. He scored at least two, probably three kills, without ever being fired upon by the Israelis. In turn, he never used the Zero-Speed Manoeuvre in combat. Nevertheless, the story of his manoeuvre began unfolding: in 1968, when the runway of Muwaffaq as-Salti AB in Jordan was undergoing reconstruction, pilots of the Lockheed F-104A Starfighters of No. 9 Squadron, Royal Jordanian Air Force, were temporarily deployed to Syria. Together with them was a pair of Pakistani pilots serving their exchange tours in the Middle East. The latter two, including

Ammanullah Khan, saw the Syrian pilots flying the manoeuvre and asked to join Mohammed in perfecting it to a level where it became the standard defensive tactic of SyAAF MiG-21 fliers. A year later, an Egyptian MiG-17 unit was deployed to Syria to bolster its defences. The commander of that squadron, Muhammed Zaki Okasha, saw the Syrians training the manoeuvre, and asked one of them to teach him how to fly it. Much to the displeasure of the Pakistanis – concerned the Egyptians might reveal it to the Indians that served on exchange tours there – Mohammad did so. Of course, Okasha then 'brought' the Zero-Speed Manoeuvre to Egypt and it soon became a standard defensive tactics for local MiG-21 pilots. During the October 1973 War, it became the source of such Israeli legends about a 'crazy Egyptian pilot', that 'stood his MiG-21 on the tail'. Foremost, it was in Egypt that the Soviets – present in the country in large numbers from 1970 until 1972 – saw the Egyptian pilots fly this manoeuvre, and from where they brought it home.

Of course, more than 20 years later, when the Pugachov Cobra was flown by Soviet test pilots (and only test pilots!) in Su-27s for the first time, nobody cared any more about who it was that had originally developed this manoeuvre and flew it in a MiG-21. Indeed, thanks to the widespread anti-Arab sentiments (and anti-Syria in particular) in the West and the East, hardly anybody would come to credit 'some unknown Syrian pilot' – Mohammed Mansour – with its invention.



A diagram explaining the Zero-Speed Manoeuvre. (Diagram by Tom Cooper)

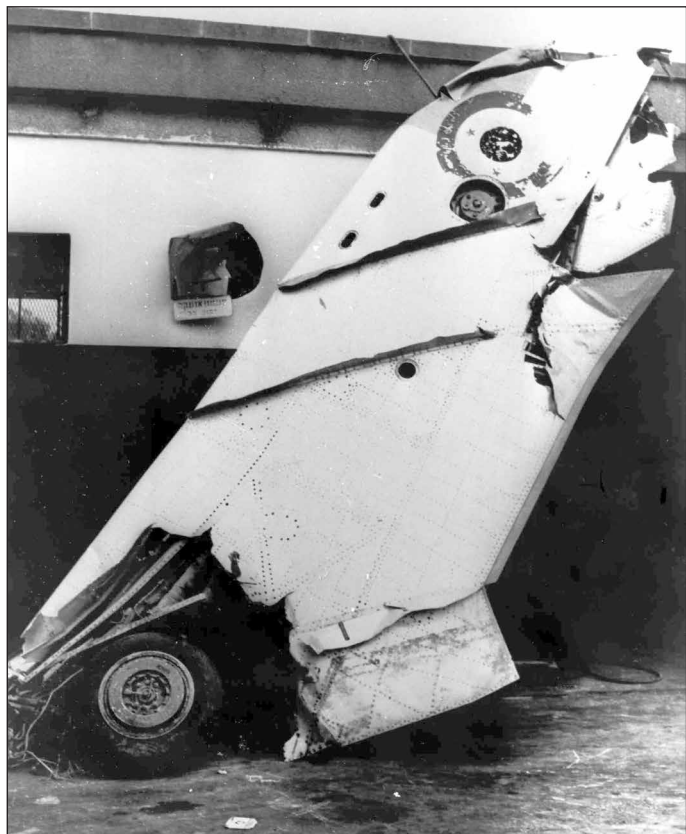
together with its pilot, Sa'eed Irays Frayq. Ignoring the loss, the government in Damascus released bombastic claims via its media, claiming a major victory, and an effective operation over Israel. Assad went as far as to boast that for the first time since 1948, Syria had taken the offensive rather than the defensive. That said, Jadid, Assad, and Suweidani did take care to order their ground troops to cease fire, and the stranded Israeli vessel was eventually towed away on 26 August 1966.²²

Monitoring the developments in Syria with increasing concern, in September 1966 Nasser sent Major-General Sa'adi Najib Ali and Brigadier-General el-Hinnawy of the UAC to Damascus, with a renewed offer of help. However, neither Jadid nor Assad would even meet the Egyptian. Instead, Lieutenant-General Suweidani explained to him that his country was lacking the facilities necessary for the deployment of Egyptian combat aircraft and ground troops. Certainly enough, this was a blatant lie: after all, during 1966, Assad and Moukiiad took care to reactivate disused airfields at as-Seen (about 100km east of Damascus) and Marj Ruhayyil (30km south of the city) – both from the times of the French Mandate – and had each of them equipped with 2,440-metre-long runways and eight hardened aircraft shelters capable of housing MiG-21s.

Table 3: Known Syrian acquisitions of Soviet-made Military Aircraft, 1961-1966

Aircraft Type	Number	Notes
Il-14	9	all from East Germany
MiG-15UTI	20	10 from the USSR in 1965, 10 from Poland in 1966
MiG-21F-13	34	delivered between 1963 and 1966
MiG-21FL	20	delivered through 1966-1967

In similar fashion, Assad's 'homebase' – Dmeyr AB, which he converted into a true fortress after the coups of 1963 – was further expanded through the addition of a parallel runway, expansion of the apron, construction of several hangars and up to a dozen hardened aircraft shelters. In the north, the runway of Nayrab AB outside Aleppo was extended to 2,900 metres, and the base received revetments for combat aircraft. Finally, the construction of the new Damascus IAP experienced significant progress, and the first of two 3,700-metre runways capable of handling take-offs



The wing of the MiG-17F flown by Ghazi Abdul Kader al-Qazwazi, shot down on 14 August 1966 over Lake Tiberias. Notable are traces of additional colour along the wing-tip, outside the roundel: the SyAAF MiG-17Fs of the time are known to have had their wing-tips painted in red, yellow, and blue, designating the flight within the squadron. (IDF)

and landings of the heaviest aircraft in service in the world at the time, was completed in late 1966.²³

MORE TROUBLE

The uproar over the clash on Lake Tiberias had barely settled down when Jadid's right hand, Major Salim Hatum – apparently supported by the Jordanian Secret Service and the Central Intelligence Agency of the USA – launched his own coup attempt. On 8 September 1966, he managed to detain President Atassi and the Chief-of-Staff Suweidani. Jadid hesitated, but Assad did not: he threatened to order the SyAAF into an all-out attack on the town of Suweida, Hatum's birthplace, should the latter not abandon his design. Aware of the air force's 'effectiveness' in crushing the coup attempt of the previous February, the fiery Druze officer gave up and fled to Jordan. To call Assad's reaction to Hatum's plot 'merciless', would be an understatement: immediately after securing Damascus, he deployed the so-called Defence Companies – essentially a private militia commanded by his brother Rifa'at – to arrest over 500 officers of the armed forces and more than 2,000 civilians (mostly Ba'ath Party members): all were jailed for decades.²⁴

Of course, no sooner was this affair over than Jadid's government – and the Israeli 'hawks' – returned to the practice of provoking each other along the armistice lines on the Golan Heights, and then with such gusto that their games ultimately provoked the June 1967 Arab-Israeli War.

5

EGYPT'S NEW ACQUISITIONS

The principal reason for Nasser seeking Arab unity in countering Israeli actions against Syria in 1963-1965 was that he knew the UAR armed forces were not yet ready for a major showdown with their arch-enemy. This was not solely related to the fact that all the Egyptian orders from 1961 and 1963 were still incomplete, but also to the economic condition of the country and the capacity of the armed forces to accept and press the new equipment into service: even if the Soviets could have delivered at a faster pace, Cairo was experiencing ever bigger problems with payments, while the UARAF was meanwhile approaching limits in regards of finding enough personnel to operate everything it was receiving.

MIG-19S AND NO. 20 ARABA SQUADRON

Ever since the first Arab-Israeli War in 1947-1949, and especially in the aftermath of the Middle East being swept over by the shockwaves of pan-Arabism in the late 1950s, and then the establishment of the UAC in 1964, there have been no end of reports about close cooperation of various Arab armed forces. Not only countless Israeli publications, but even contemporary reports by various US intelligence services were widely creating the wrong impression that in the event of the next Arab-Israeli War, Arab militaries would all unite under one command and confront Israel as a unified and coordinated force. As described above, actual levels of cooperation were minimal, and even the establishment of the UAC changed very little in this regard. That said, the Arabs had kept on trying to establish joint military units before 1964, and again after. One of first such efforts was launched as early as of January 1957, when four or five pilots each from Algeria (then officially still a part of metropolitan France, but already fighting for its independence), Egypt, Jordan, and Syria, received the order to gather at the Air Force College at Nayrab AB in Syria. Their joint training – intended to result in the establishment of a 'pan-Arab squadron', and run on Chipmunks – was rudely interrupted in April of the same year, when pan-Arabist General Ali Abu Nowar staged a failed coup against King Hussein of Jordan: immediately afterwards, all Jordanian pilots were sent back home. Others were recalled over the following weeks, eventually leaving only a small group of Algerians to complete their basic flight training in Syria.

As described in Volume 1, during the short-lived United Arab Republic in 1958-1961, the UARAF then established another 'combined' unit, staffed by a mix of Egyptians and Syrians: this was No. 31 'Crow-Bat' Squadron, which operated radar-equipped MiG-17PFs originally acquired by Syria, and was usually commanded by an officer of Syrian origin. The unit retained its insignia and aircraft even once Syria had left the Union in 1961 and was then reinforced through the addition of two of Jordanian pilots that – as mentioned above – defected to Egypt a year later: Tahseen Fuad Hussein Saima and Harib Arif Sandoukah.

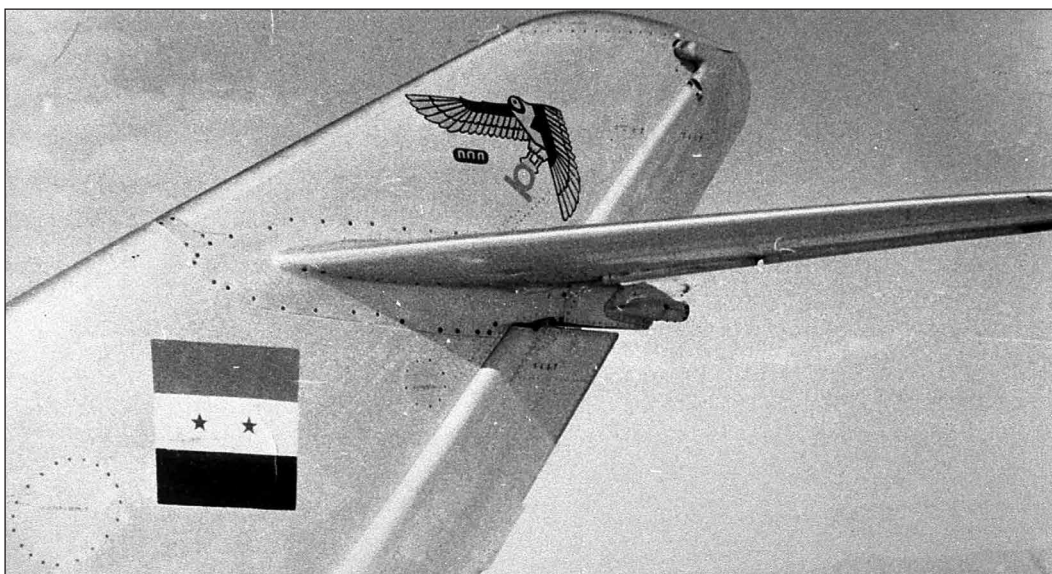
In 1963-1964, the Iraqi president Abdul Salam Arif attempted to court Nasser into establishing a federation of his country and the UAR. Cautious after all the negative experiences in Syria, Nasser proved much too reluctant to initiate another such experiment and thus the negotiations remained fruitless. However, as a sign of his goodwill, Arif donated between seven and nine of the Iraf's surviving MiG-19s – stored ever since the two coups d'état of 1963, described in Volume 1 – to the UARAF. This donation proved highly important for No. 20 Squadron, because its MiG-



A trio of MiG-17PFs from No. 31 Squadron, UARAF, seen in the mid-1960s. Notably, all aircraft retained their 'Crow-Bat' insignia on the nose. Barely visible on their rear fuselages are black identification stripes. (Albert Grandolini Collection)



Pilots of No. 18 Squadron, Air Group 2, UARAF, seen at el-Arish in 1966. Standing in the centre (in civilian clothes and sunglasses) is Fuad Kamal, former MiG-15 pilot now serving as instructor with the unit. Notable on the jet behind is the application of red stripe around the intake, the IFF-antenna on the top of the fuselage, and double launch rails under the outboard part of the left wing. (Fuad Kamal Collection)



As well as advising younger pilots, as an accomplished artist Taher Zaki decorated numerous MiG-17s: this was one of his artworks, seen on the example probably wearing the serial number 2028, at el-Arish in 1965-1966. (Taher Zaki)

19 fleet was now in very poor condition. Reliability issues reached such proportions that, short on MiG-21s, Sidqi Mahmoud assigned Ala'a el-Din Barakat as its new commander, although he was fresh back home from a conversion course for MiG-21s in the USSR. Given a free hand to rehabilitate the MiG-19S, Barakat went to quite some extents to staff his new command with the best pilots and ground personnel available. Amongst others, he had all the remaining aircraft put through overhauls at one of the newly-constructed factories in Helwan, and then took care to have British-trained Saima and Sandoukah assigned to his squadron, followed by another former Jordanian Hunter-pilot that defected to Egypt in 1962, Saqid ash-Shra. However, instead of serving as a pilot, the latter served as a ground controller, and became famous for his call-sign, 'Jordan'. Next, Barakat decided that the 'new', ex-Iraqi MiG-19S fleet should receive the names of major Arab cities – including Baghdad, Beirut, Cairo, Casablanca, Damascus, Khartoum, Mecca, Mosul and Riyadh – applied in white and in Arabic script *instead* of the usual serial numbers in black, on either side of the nose. Frequently tasked with escorting airliners carrying domestic and foreign dignitaries around the UAR, before long the unit became known as the 'al-Araba' Squadron.

As well as its 'ceremonial' duties, No. 20 'Araba' Squadron soon recovered its operational capability. With the tensions with Israel remaining high – primarily because of regular high-altitude reconnaissance overflights by Vautours and Mirages – by 1965 its jets were regularly standing alert again and scrambled whenever necessary. This is how it came



Tahseen Zaki climbing up the ladder of the MiG-17F serial 2038 of Air Group 2, at el-Arish AB in 1966. Only months later, Zaki would be sent to lead the conversion of the first group of Egyptian pilots to the Su-7BMK. (Tahseen Zaki Collection)

to be that Salah Danish saw his first encounter with the Israelis on the first day of his active service with the unit, in summer of the same year:

On the first day I was ordered to stand alert dressed in my flying suit and ready to take off at short notice but waiting in the squadron ready room. Almost immediately after my duty began, I was ordered to scramble together with Ala'a Barakat. We took off in full afterburner and I had my eyes all the time glued to Barakat's aircraft until the moment I noticed a lamp showing the doors of my undercarriage gear had not closed completely. This meant that I would be spending extra fuel during the mission. The ground control guided us towards an area near el-Arish where there was a clash going on and we already had four other aircraft airborne. As soon as we approached, the Israelis quickly disappeared, I called Barakat to make a visual check of my aircraft and see if the doors of my undercarriage were open. But, Ala'a was engaged with the Israelis and delayed. By that time, I was low on fuel and so I decided to land in el-Arish. Then I received a call from General Ahmad el-Diryani: he did not want a MiG-19 to remain at such an exposed place. He decided to send Galal Abdel-Alim and one technician in a MiG-15UTI to repair my aircraft. I returned to Fayid later the same day.

Thus, and although out of service in Iraq, and never even acquired by Syria, a big squadron of MiG-19s continued serving in Egypt. Older types became involved in similar operations too: indeed, most action against the Israeli airspace violations was still seen by MiG-15bis and MiG-17F equipped units of Air Group 2. Its contemporary commander, Tahseen Zaki, commented:

In 1965, I commanded Air Group 2, which was constantly rotating detachments to el-Arish AB, our closest base to Israel. We had not only standing orders not to violate the Israeli airspace, but indeed: not to fly any closer than 35 kilometres to the ceasefire line...¹

One of Zaki's pilots was Mohammad Nabil al-Masri, who flew MiG-15bis. He recalled a clash with several Mirages from late summer 1965:

We started from Kabrit and went a long way into the Sinai and were flying up to el-Arish on a training mission. We heard on the radio that enemy aircraft were in the area. Then, as we were approaching el-Arish from the south, we were attacked by two Mirages, then four, and then six. I remember turning and turning, and I got in behind one Mirage that was diving down in front of me. I thought it was a trap.

They used that a lot: put one aircraft in front in dive, and if you chased it, another would pop-up and get you. So, I started looking on both sides and behind and saw nothing. At that time, my fuel indicator started flickering, and we had to be on the ground in 10 minutes. I called my wingman who had remained with me throughout the combat. He was great. He would call, "they are coming in... they are firing", and we would make very hard manoeuvres never to give them the opportunity to get behind and get a good shot. We would turn into the Mirages and fire at them. I think that we hit them once or twice. They withdrew because they were low on fuel. After that I started to be afraid: we made it to el-Arish but all the way I kept looking for other Mirages... what was very astonishing was that these fools didn't win! I say fools because if they just flew over us and not let us go back, we would have run out of fuel and would be forced to eject!

Zaki continued:

...the Israelis often violated our airspace, even flew very low across el-Arish AB. This made my pilots feel bad, as our high command ordered us not to fly into the Israeli airspace. During one of these flights, a pair of MiG-17s led by the late Salah Mansour, reached Dimona. There he saw some very strange construction going on and thought it looks like a nuclear reactor. He immediately informed me and so I decided to fly with him to confirm what he had seen. This time, there was no doubt about it: a nuclear reactor was under construction! Back in el-Arish, I contacted Air Marshal Abdel Majid el-Rafie, commander UARAF Eastern Sector, and told him what had been seen. I was risking a court martial for flying that deep into Israel, but the Rafie promised not to punish me or my pilots. Instead, he said, "Well done!"

While this was not the first time the Egyptian authorities were informed about the construction of a nuclear reactor in Israel, it was certainly the first – and probably the last ever – time an Egyptian actually saw the complex in question from such a short

range. Other pilots would see it again, a few years later, when their overflights caused a major escalation with the enemy.

MIG-21'S FATEFUL FIRST KILL

At 1005hrs of 23 December 1964, mid-way through a military exercise east of Cairo, UARAF early warning radars detected an unknown object entering the airspace over the Sinai from the direction of Eilat, in Israel. Two MiG-21F-13s were scrambled to intercept what turned out to be a slow-moving transport aircraft with two booms and fins. Both the ground control and the MiG pilots attempted to contact its crew on international distress frequencies and requested them to land at Cairo IAP, but there was no reply. Only when one of the MiGs approached the cockpit did the crew react to hand-signals and it then lowered the landing gear and acted as if following instructions. However, while on finals to Cairo International, the aircraft suddenly retracted the landing gear and turned away in the direction of Alexandria. Although receiving orders to open fire and shot down the intruder, the two MiG-21 pilots initially fired in front of the transport. When it failed to react, one of them fired three short bursts at the engines. The badly damaged aircraft burst into flames and crashed near the village of Halek el-Gamil, between Marbut and Abu Hamas, in northern Egypt.

As far as is known this was the first 'aerial victory' or 'kill' scored by any MiG-21 ever – and regardless of where. The type might have participated in more than 50 wars afterwards, and scored kills in about a dozen of these, but all of that happened after 23 December 1964. As the subsequent Egyptian investigation revealed, the transport in question was a Fairchild C-82 Packet, owned by John Mechan, a millionaire from Texas and a close friend of the US President Lyndon B Johnson. Because of its twin booms and fins, it was misidentified as a Nord N.2501 Noratlas transport of the IDF/AF. Of course, this mattered little in the White House, where Mechan's death caused massive displeasure with far-reaching consequences: further offended by several inflammatory speeches given by President Nasser, some of which created the impression of the President of the UAR openly siding with the USSR in the Cold War, it created the impression of Egypt as not only a customer for Soviet arms,

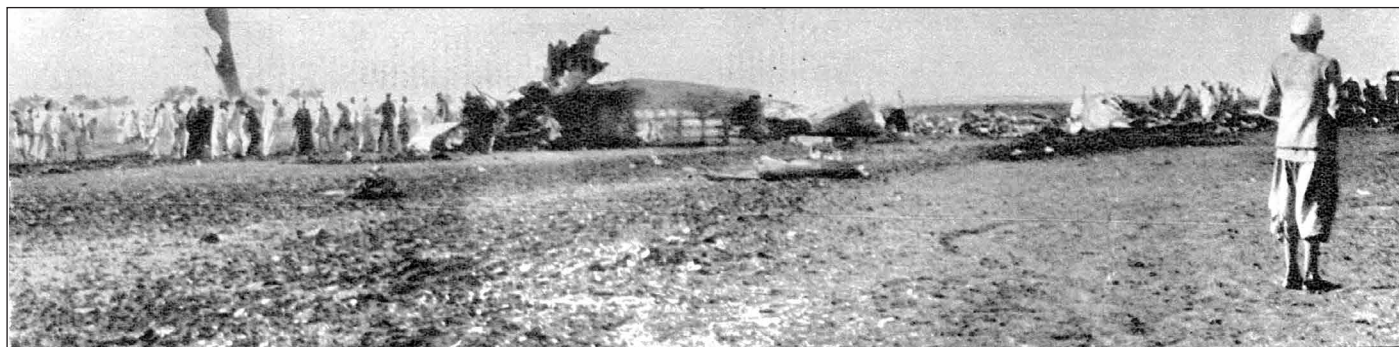
but 'another Soviet proxy', if not 'Moscow's puppet'. Enraged, in summer 1965, President Johnson abandoned the traditional US policy of neutrality in the Middle East and ordered a halt of wheat supplies to the UAR. To say this decision brought the country's economy to the verge of collapse would be an understatement: for all practical purposes, by this time Cairo could not sustain its population without the US wheat for longer than a few months. Left without choice, Nasser sent the president of the Parliament, Anwar el-Sadat, to Moscow, with a request for help.

AUGUST SURPRISE

Ironically, after years of disputes with Nasser – and in the light of the recent visit by Chou-En Lai, the first Premier of the People's Republic of China to Cairo – the Soviets had by then virtually written off their expectations to ever exercise serious political influence in Cairo. All of a sudden, Moscow now saw a chance to rebuild its standing. Sadat thus found himself surprised by the decision of the new Soviet government to not only supply the necessary wheat, but also to write off 50 percent of Egyptian debts, to reduce the scheduled annual payments for 1966-1967, and postpone payments due in 1967-1970 to 1971-1974. Moreover, the Soviets offered the UAR a Treaty of Friendship and, when this was signed, the next major arms deal. Valued at around US\$310 million this stipulated a substitution of the still incomplete deliveries of MiG-21FLs by more advanced MiG-21PFMs, and the expansion of that contract through an additional batch of MiG-21F-13s. Moreover, the Soviets promised to not only start deliveries of Su-7BMKs ordered by Cairo in 1963, but to help convert entire UARAF units to An-12s and Tu-16s, and then to complete the work on the build-up of an IADS.



A pair of UARAF MiG-21F-13s during a take-off for a training sortie from Inchas AB in the mid-1960s. (Nour Bardai Collection)



The wreckage of John Mechan's C-82A Packet (construction number 10164, registered as N128E), photographed for the Egyptian press on the afternoon of 23 December 1964. (Nour Bardai Collection)

While definitely ‘fantastic news’ for Nasser’s government, the surprising willingness of the Soviet leadership to provide economic and financial aid, and advanced military equipment at highly favourable terms was a twin-edged sword. On one side, it resulted in a rapid build-up of the UAR armed forces. However, in turn it caused a massive rise in defence expenditure, putting additional strain upon Egypt’s economy – which was already in a deep crisis. Left without choice, the government in Cairo resorted to deficit financing to continue a simultaneous expansion of its armed forces, development of the economy, and raising living standards: the result was inflation, increasing problems with foreign payments, the introduction of austerity measures, and a continually rising dependence on trading with the USSR. While barely felt by the armed forces at earlier times, by 1966 the austerity measures had a severe impact: instead of the required minimum of about 200-240 flight hours a year, most of pilots received fewer than 50-60 – and that at a time when the number of average flight hours for Israeli pilots was increased from 135 to 150-180. In attempt to cover-up the crisis, Amer went as far as to officially grant lengthy leaves – especially to officers serving in the Sinai: however, there is no doubt that this also had adverse effects upon their skills, then while on leave they could not train, nor even convert to newly acquired aircraft.²

IZDELIYE-77 AND IZDELIYE-76A

The MiG-21FL – or Izdeliye-77 – was the first variant delivered to Egypt equipped with the R-2L radar (ASCC/NATO-codename ‘Spin Scan’), and with slightly improved aerodynamics. Certainly enough, considering the small size and limitations of the basic design, there was little the Soviets could add to the airframe in order to rectify its deficiencies, because any additional equipment would have disastrous effects on performance. Nevertheless, the new variant became a handsome design featuring a completely new forward fuselage with a larger inlet around a larger, double shock cone containing the radar, and a deeper fin with a larger surface area to compensate for the larger and heavier frontal section (to improve stability at high speeds). However, as provided to the UARAF starting in 1964, the MiG-21FL did not contain any of the then ‘super modern’ equipment – such as the Lazur datalink, which, at least following the theories of the GenStab, was to enable the ground control to vector the interceptor effectively by ‘remote control’, without any kind of voice communications. Moreover, the MiG-21FL was heavier than the earlier MiG-21F-13, while powered with the R11F2-300 engine instead of the slightly improved and more powerful R11F2S-300 now available. In turn, and in line with widespread theories of the time – whether in the USSR or in the West – the new variant had no guns whatsoever: all the armament consisted of just two R-3S missiles, 164 of which are known to have been delivered to the UARAF in 1965-1966. Still, the Egyptians did not complain because the new variant could attain higher maximum speeds thanks to the fairing aft of the canopy, which reduced drag.³

Theoretically at least, the MiG-21PFM – or Izdeliye-76A – was a significant improvement over all the earlier variants. Actually, it was a further development of the MiG-21PF, or Izdeliye-76, which preceded the MiG-21FL: indeed, the latter was developed for export purposes only. Unsurprisingly, outwardly, the MiG-21PFM differed very little from the MiG-21FL: most of the airframe remained the same. The principal exception was the cockpit where the new KM-1 ejection seat was installed instead of the old SK, enabling the installation of a much lighter, side-

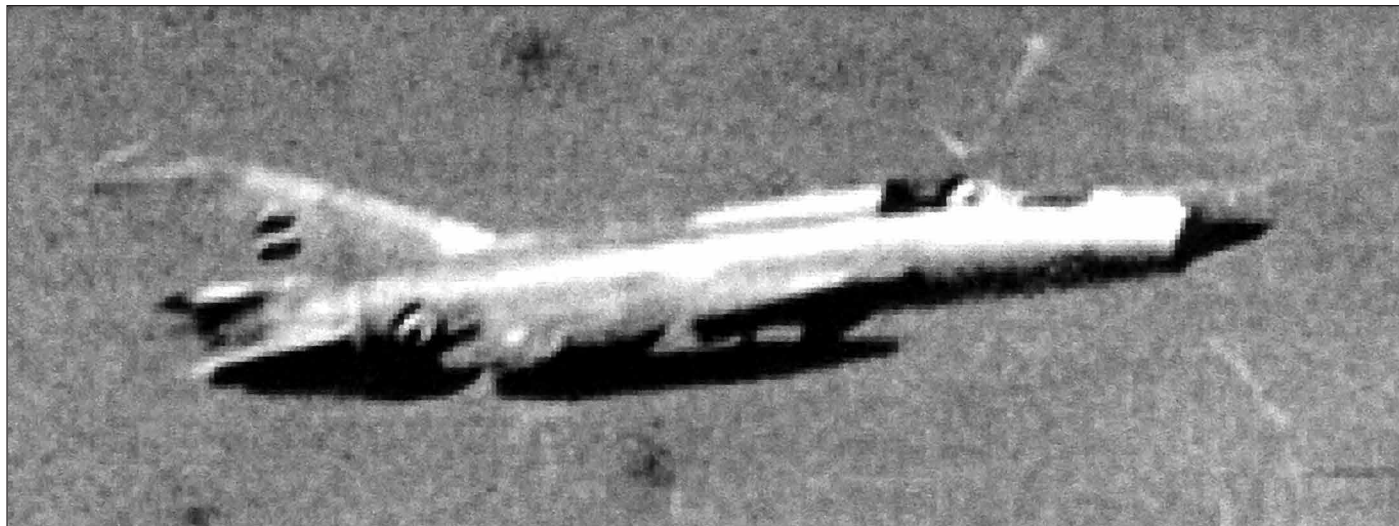


A UARAF pilot, wearing the VKK-4 partial pressure suit, seen while climbing out of the cockpit of a MiG-21PFM. Notable near his left boot is the headrest of the KM-1 ejection seat, and, behind him the side-hinged canopy of the new variant. (Jens Heidel Collection)

hinged canopy. More importantly, the MiG-21PFM featured flaps blown by air bled from the engine, which significantly reduced the approach and landing speed, in turn shortening the landing run. However, the armament remained limited to two R-3S missiles, just as on the FL.

INTO SERVICE

Contrary to the wishes of Soviet advisors that helped introduce the new MiG-21s to the service with the UARAF, and insisted on only highly experienced pilots being assigned to fly new versions, amongst the fliers that underwent conversion in 1965 were at least seven youngsters, including Fikry el-Ashmawy, Farid Hafrush, Mamdouh Heshmat, and Qadri Abd el-Hamid – the latter having earned himself the prestigious ‘Best Pilot in the Class’ prize at the Air Force Academy in Bilbeis of that year. Their conversion was undertaken at the Operational Training Unit at Kabrit AB (where Hamid earned himself two additional trophies: ‘Top Gun’ and ‘Best Pilot’), then commanded by Major al-Masry. As so often since 1963, the disorganisation within the ranks of the UARAF then scattered them all over the service: while Hamid was assigned to the MiG-21F-13 equipped No. 45 Squadron, home based at Abu Suweir AB, the other six were sent to the fly the new version with the newly established No. 43 Squadron, commanded by Samir Abdullah and home based at Cairo West AB, and none to the second unit to fly the MiG-21FL, No. 40 Squadron. Of course, all units also included numerous experienced pilots – like Tamim Fahmi Abdullah, a seasoned veteran from the war in Yemen:



Photographs of early Egyptian MiG-21FLs and MiG-21PFMs from the times before the June 1967 War remain very scarce. Lacking any kind of weapons, but obviously having two black identification stripes applied around the rear fuselage, this MiG-21PFM – apparently with some sort of a relatively small 'anti-glare panel' applied in black in front of the cockpit – was filmed from a passenger aircraft it escorted in 1966. (David Nicolle Collection)

In 1966, I transitioned to the MiG-21FL. I flew with Adil Nasir and Nabil Shuwakry and we were under command of Colonel Farouk el-Ghazzawy. Our squadron was home based at Inchas. At the time, we were adding four additional MiG-21 squadrons, so we were converting lots of pilots and support crews to the new variant. This process was a part of a big plan to have four squadrons equipped with it within two years. The MiG-21FL was a good aircraft: it was smooth, easy to fly, but as a fighter aircraft it was very limited. We had just two Atoll missiles, no cannon, and a lousy radar. It was a very manoeuvrable airframe, especially in rolling, but it had no gun, and no camera. The only good thing about the FL's avionics was the autopilot. Otherwise, and in general, the pilot had to be directed to an intercept by ground controllers, aim, shoot, and that's it. The Soviet philosophy worked with massive volumes of ground support and with mass waves of aircraft. They would flood the combat zone with aircraft. But, in Egypt, we had only a limited number of fighters...

Slightly disappointed about his assignment to a squadron flying 'old' MiG-21F-13s, Hamid soon found himself happy for a different reason, when No. 45 Squadron received the order to re-deploy to the Sinai:

In 1966, I was with the first MiG-21 squadron to deploy to an air base in the Sinai, this being al-Meliz AB [better known as Bir Gifgafa in the West; authors' note]. We thought we enjoyed superiority over the Israelis. We now had two wings of MiG-



One of the Tu-16s officially presented to the Egyptian public during the parade in Cairo, on 23 July 1966, seen escorted by a MiG-21F-13. As well as advanced MiG-21PFMs, Egypt may have acquired at least one additional batch of earlier F-13s in that year. Apparently, all were second-hand, former mounts of the Soviet Air Force, but overhauled before delivery. Notably, the serial number was removed from the rear fuselage of the bomber: the first of four digits were always positioned in front of the roundel, the remaining three digits after it. (Tom Cooper Collection)

21s, versus their 'single wing' with three squadrons of Mirages. Of course, we had no idea about our deficiencies in the theory of air combat: the Soviets trained us to fly Mach 2, high-level intercepts, and intercepts by night only.

Samir Aziz Mikhail shared Hamid's recollections:

We were deployed at Meliz from 1 September 1966 until 15 November 1966, and flying some of the oldest MiG-21F-13s in service with the UARAF. We were often scrambled towards el-Arish, but saw no combat: the Israelis would always withdraw in reaction to our appearance. Out of frustration, actually, I once climbed to a flight level of 60,000ft and flew along the border with Israel, to demonstrate our superiority. I could see all of the country and out to Lebanon, and got a feeling Israel is very small.... We thought we had superiority over the Israelis...we had lots of MiG-21s and a large force of six bomber squadrons,

and I thought that if we had started the war, the outcome would be different [than it proved to be in June 1967; authors' note].

Eventually, and despite delivery of up to about 110 MiG-21s between 1961 and 1967, the UARAF never managed to realise either of its two original plans for the acquisition of supersonic interceptors: neither the one to equip four units with MiG-21F-13s, nor the other to equip four squadrons with MiG-21FLs and MiG-21PFMs. By 1967, Nos. 45, 47, and 49 Squadrons were flying MiG-21F-13s, Nos. 40 and 43 flew MiG-21FLs, and only the newly established No. 26 Squadron operated MiG-21PFMs.⁴

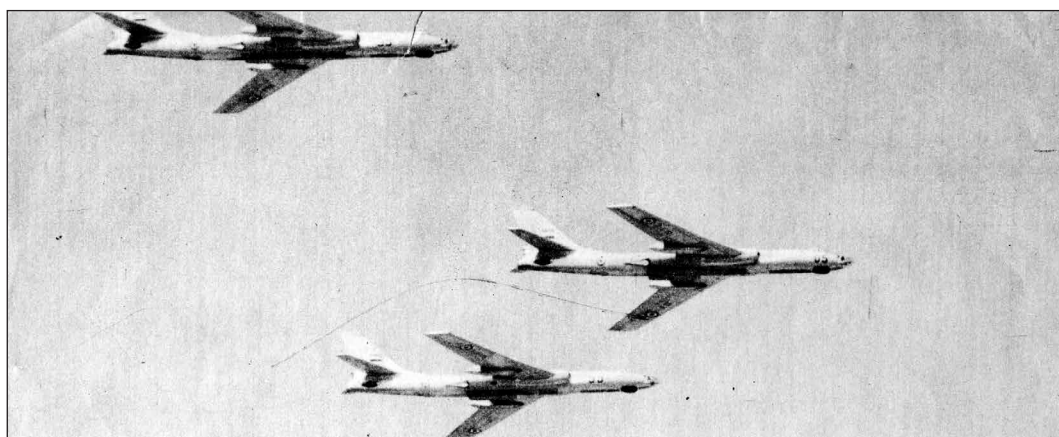
EXPANSION OF THE TU-16 FLEET

If there was any directly positive consequence of the August 1965 arms deal with Moscow, it was that the Soviets offered to intensify the conversion training of Egyptian crews to Tu-16 bombers – a move that became possible also because, mainly thanks to the hard work of 'Bunny' Sidqi, the Il-28 equipped Air Group 61 was now not only fully operational, but had a sufficient surplus of crews. Correspondingly, in autumn 1965 about 40 pilots, navigators, radio-operators, gunners and technicians underwent their conversion courses for medium bombers in the USSR: on their return to Egypt, they formed the core of the future Nos. 34 and 36 Medium Bomber Squadrons. The two units were equipped with 24 Tu-16s delivered in 1962, but until 1966 still regularly flown by Soviets crews. They were home based at Beni Suweif AB and subordinated to the newly established Air Group 65, commanded

by Mubarak (with Sidqi as Deputy). By the end of 1966, this asset was further expanded by the third squadron, formed under a secret arrangement between Field Marshal Amer and the Soviet leadership from November 1964. Under this agreement, the Soviets delivered a dozen giant Mil Mi-6 helicopters, and then accepted another group of four pilots, three navigators, three navigator-operators and two radio-operators of Air Group 61 for a conversion course to air-to-ground missile equipped variant of the Tu-16 at the Soviet Naval Aviation base of Oktyabarskoye, on the Crimean Peninsula. In July of the same year, the Egyptian crews returned to Egypt, and – in December 1965 – they were followed by a group of 19 Soviet advisors and six Tu-16KS bombers, each of which was armed with two Mikoyan KS-1 (ASCC/NATO-codename 'AS-1 Kennel'), radio-command guided air-to-surface missiles with 1,000kg warheads. The KS-1 was a unique weapon for its time, theoretically offering significant advantages to the UARAF, and thus it is little surprising that the air force took care to have a unit equipped with such systems – No. 95 Squadron – operational on them by 12 December 1966.⁵

TAKE IT OR LEAVE IT

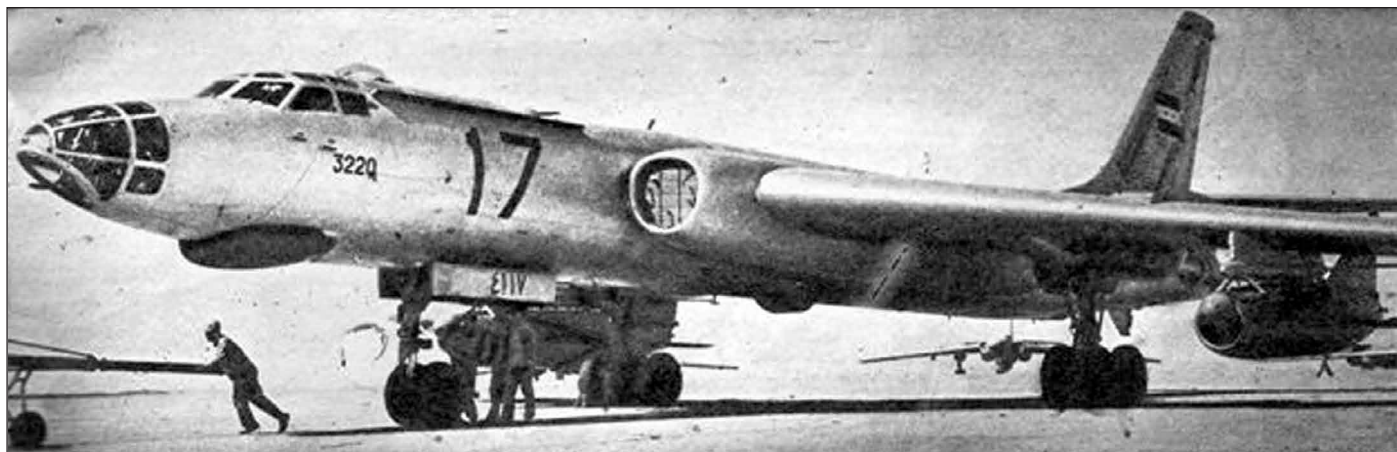
As least as important as the acquisition of radar-equipped MiG-21s was the delivery of Su-7s. The variant sold to Egypt was the Su-7BMK, which the Soviets claimed would be capable of nearly meeting the UARAF requirement for a fast fighter-bomber. Actually, the type was experiencing a particularly long research and development phase, and its progress lagged behind by years. The Su-7B was rushed into production in 1958 but entered operational service with the Soviet Air Force only two years later. Although several 'improved' sub-variants were developed, the progress remained slow to the degree where in 1963 the GenStab decided to offer it as a fighter-bomber for export. Conversion of what was originally a big interceptor for operations at high-altitude to a low-flying fighter-bomber proved anything but a success.



Another trio of Tu-16 bombers of Air Group 65, UARAF, seen over Cairo in July 1967. All three retained their Soviet borts, including (from front towards the rear): 35, 05 or 65, and 55. (Nour Bardai Collection)



A front view of a KS-1 armed Tu-16K. Operated by No. 95 Squadron, part of Air Group 65, these jets and their powerful weapons were acquired as the means to improve the UARAF's capability to support the Egyptian Navy. (Nour Bardai Collection)



A left quarter view of the Tu-16K. Clearly visible are the 'last four' of the construction number, applied below the cockpit (3220), the old 'bort' number retained from the times the jet served with the Soviet Naval Aviation and the new UARAF serial number – 4117 – the last two of which were obviously based on the bort number. (Nour Bardai Collection)



A Tu-16Ks (full serial number 4108) armed with two KS-1 cruise missiles, seen while escorted by a pair of MiG-21F-13s, during the military parade in Cairo in July 1966. (David Nicolle Collection)

no navigational aids either, only [a] compass. In fact, everything depended on the pilot, who flew and fought like a medieval knight.

However, the big new fighter was still suffering from all the possible teething problems, with negative impacts upon its efficiency and reliability. The first issue was its susceptibility to foreign object damage: the intake was relatively close to the ground, and the giant Lyulka AL-7F1 turbojet tended not only to suck in any small loose objects within an unusually long and wide area in front of the aircraft, but also suffer

The Su-7 was though, easy to fly, and – at least in theory – it proved capable of hauling 2,000kg of bombs while accelerating to 1,000km/h. While this was short of the UARAF's actual requirement, Amer's favourites did not find it hard to persuade convinced Soviet friend Air Marshal Sidqi Mahmoud to place an order for it, despite warnings from UARAF pilots that test-flew the type before the June 1963 Arms Deal, as recalled by Salah Danish:

The Su-7 were not good. Mohammed Abdel-Rahman travelled to the USSR to study and test-fly the type, and he spent lots of time working with the Soviets. They eventually began admiring him, invited him to visit the production plant and explain the type's weaknesses to help improve it further. But to no avail...

All that mattered to Sidqi Mahmdoud were the Soviet claims about the Su-7BMK's performance figures: these made it clearly superior to the old MiG-15bis and MiG-17Fs, as explained by Fikry el-Gindy:

We really needed a proper fighter-bomber. The MiG-17 had too small a weapons and ammunition load. We did add two bomb racks to it, but only after the 1967 War. Before that, the aircraft [had] no fire-control system, only a gyro sight. There were

extensive damage just due to ingesting sand. This problem was never solved in satisfactory fashion, even once the Soviets installed a mesh that collected at least the bigger pieces of earth and stones from being ingested into the engine, inside the intake. The next issue was particularly critical: developed for operations at high altitudes, whenever the Su-7BMK was flying low – the usual arena for fighter-bombers – the AL-7F1 was consuming fuel at alarming rates. If operated in full afterburner, it would empty internal fuel tanks within less than five minutes. The Su-7BMK received additional fuel tanks integrated into its wings, but these were insufficient to stretch the endurance because the fighter-bomber had to operate at higher all-up weights than the originally planned interceptor. The alternative was to install drop tanks (available in capacities up to 1,150 litres, or 510 imperial gallons) under the wing or centreline hardpoints, but this could only be done at the cost of lessening the warload. In other words: exactly like MiG-15bis and MiG-17F before, the aircraft could either carry weapons, or extra fuel, but not both. Indeed, armament was another problem: the jet proved a stable gunnery platform, and its two big Nudelman-Rikhter NR-30 guns installed in the wing roots were highly reliable and precise. A hit by their milk-bottle-sized 30mm shells could knock out even a tank. However, each had a magazine with only 70 rounds, and they fired at a slow

rate. Finally, instead of being armed with FAB-500M-62 bombs as stipulated in the Egyptian order, they arrived in the UAR armed with launch rails for 28 57mm S-3K rockets only (one launch rail for seven rockets on each of four hardpoints). As of the 1960s, the Soviets had never let any of their foreign customers test-fire any kind of weapons in the USSR: thus, it was only much later – and then, indeed, too late – when test-firing the S-3s in Egypt, that the UARAF pilots found out that the S-3Ks were, literally, falling apart when fired, or – if operating as advertised – regularly undershooting their targets by 150-200 metres.

Unsurprisingly considering all of this, even once Egyptian pilots travelled to the USSR for conversion training to the new fighter-bomber, this proceeded at a much slower pace than expected, while deliveries were once again delayed by several months. After quickly refreshing their Russian language skills, and passing tests on MiG-15UTIs at Lugovaya in August 1966, the UARAF pilots found themselves doing little but attending endless theoretical courses. It was only on 7 October that year that Abdel Wahhab el-Shennawy flew his first solo on a Su-7BMK manufactured for Egypt.⁶ Indeed, their subsequent training proceeded at an even slower pace: by the time he flew for the last time in the USSR, on 30 November 1966, el-Shennawy had accumulated only 6 hours and 30 minutes on the new type. The reason was not only the conservative Soviet training syllabus, emphasising safety, but foremost the poor reliability of the new jet. Tahseen Zaki, who was trained on Su-7BMKs together with el-Shennawy, recalled:

After only a couple of sorties, we realised that it still had many defects in its fighting capability. Mainly its small weapons load and, worst of all, its range. I filed a related report to Field Marshal Amer: when he arrived in the Soviet Union, he summoned me to discuss this question and later, on the basis of my report, he decided to buy only 36 Su-7s, and – after the Soviets refused to supply us with their special runway-clearing vehicles unless we paid “cash down” – cancelled the rest of order.⁷

Overall, even as of early 1967, the Su-7BMK was still nowhere near seriously entering service with the UARAF.

SPOILED OPPORTUNITY: AIR DEFENCE COMMAND

For the very same complex of reasons for which the UARAF proved unable to acquire 150 MiG-21s and 30 SAM-sites, as planned in 1961, the build-up of an IADS covering Egypt between Alexandria, the Suez Canal, and Cairo developed extremely slowly over the next four years. Arguably, the Soviets had delivered the equipment for 18 SA-75 Dvina-A/AK SAM-sites (sub-variant of the S-75 system, codenamed ‘SA-2 Guideline’ by the ASCC/NATO) in 1961, and another nine, a year later. In 1962 the construction of a training complex for SA-2 SAMs was launched outside Dahshur, and by the end of the following year a total of 792 V-750VMV missiles were in the UAR. However, due to construction bottlenecks and lack of advisors, training of Egyptian SA-2 crews and development of the necessary support infrastructure were then slowed down for years. Moreover, the Soviets never delivered any of the simulators, none of the high-power early warning radars (such as the P-14, codenamed ‘Tall King’ by the ASCC/NATO), and no ATMS that would tie the emerging SAM-sites, nor them and manned interceptors, into an IADS. Consequently, it was only in 1965 that the first SA-2 unit of the UARAF became operational, and a group of six officers – led by General Muhammad Ali Fahmi, and including Taher Zaki,

a former MiG-17 pilot – travelled to the USSR for an advanced course in air defence operations. A delivery of improved P-15 radars and an ATMS – including computers considered necessary to integrate the work of SAMs and manned interceptors and calculate intercept vectors for the latter – was agreed with the Soviet leadership during Nasser’s visit to Moscow in November 1965, but nothing happened. Instead, a month later a group of Soviet missile experts visited the UAR to direct the integration of the available radars, SAMs, anti-aircraft artillery, and aircraft into an IADS, but the system was dependent on now old P-10 and P-12 radar systems and public telephone lines.⁸ Taher Zaki witnessed the first exercise run by the IADS in question:

The defences totally failed to spot any aircraft underway at altitudes below 500m, because our outmoded Soviet radars could not see anything flying below that level....After these exercises, a meeting was held at the Institute of War Studies at Almaza AB. It was attended by Air Marshal Sidqi Mahmoud, and was concluded by one of the Soviet advisors who said that the UARAF integrated air defence system was sound, except that it required minor modifications to SAM-systems in the northern Canal Zone. This statement surprised me a lot!⁹

Back from the Soviet Union in 1966, Fahmi and his deputy, Major-General al-Qalawi, began setting up their new command. By recruiting officers from the both the UARAF and the army, in March 1967 they created the Air Defence Command (ADC): theoretically an independent branch of the armed forces, responsible solely for air defence of Egypt. Ironically, the first obstacle Fahmi and his aides faced was not Israel, but the internal organisation and structure of the armed forces: Amer maintained his tight operational control over all brigade-sized units and would never let any commanders operate at their own discretion, or the UARAF assign its interceptors to the control of the ADC. Similarly, his subordinates – no matter how often requesting advice from ADC’s experts – proved unwilling to work accordingly, as recalled by Zaki:

In May 1967, four air force officers – Air Marshal Afifi, Air Vice-Marshal Daghedhi, Lieutenant-Colonel Abd al-Ra’uf Abd al-Hamid and Lieutenant-Colonel Hamdi Abu Zaid – and four Army generals came to the ADC HQ to ask for our advice about how best to cope with a possible surprise attack of the Israeli Air Force. I told them:

1. camouflage the aircraft
2. build hardened aircraft shelters
3. when an attack is expected, allow the HQ ADC to assume command and control the battle
4. at first light each morning have four aircraft flying over each base as a standing combat air patrol. These aircraft must be constantly replaced throughout the day
5. have lots more anti-aircraft guns to defend the air bases

This was all written down in a report that General al-Qalawi and myself made....Unfortunately, the High Command did not take my advice and there were no permanent CAPs. The Air Force commanders had been told by the government that these things were not possible because there was not enough money.¹⁰

The longer the ADC operated, the more concerned about the general situation Zaki became. Eventually, he went a step further and prepared a simple calculation aimed to demonstrate what Egypt



One of 792 V-750VMV missiles for the SA-75 Dvina (SA-2 Guideline) SAM-system (centre, pointing upwards), delivered to the UAR in 1962-1963, seen when the system was shown in public for the first time, during a parade in Cairo of July 1966. Vehicles in the foreground include a BTR-152 armoured personnel carrier (left), and a Soviet-made truck carrying a P-15 Termit anti-ship missile (ASCC/NATO-codename 'SS-N-2 Styx'). (Albert Grandolini Collection)



Another look at a pair of V-750VMV missiles for the SA-2 system, shown on their transport trucks during the same parade. ADC's SAM-sites of the time were all meticulously constructed, but also fixed in their position: vehicles and trailers of this kind served the purpose of transporting reloads. (Albert Grandolini Collection)

would face in the event of a sudden Israeli air strike. Considering that as of spring 1967, the air force usually held 34 interceptors at Readiness Rate I and 32 at Readiness Rate II, and considering the assessed strength of the IDF/AF, he quickly concluded that if the Israelis deployed about 180 fighter-bombers for their strike, even under ideal conditions Egypt could counter these with, at most, 66 MiGs. Keeping in mind inadequate dispersion of available aircraft, and their almost complete exposure in the open, he concluded, the UARAF was not in a condition to withstand an opening Israeli air strike. Still, all of Zaki's, Qalawi's, and Fahmi's warnings were ignored, or explained away, always for the same reasons: there was not enough money for the protective measures they demanded.¹¹

Overall, by May 1967, the ADC was 'complete' but actually non-operational. It did control a radar network and 27 SAM-sites, but half of the latter were still working up. Foremost, not one

SAM-site could fire a single missile without permission from Amer – who regulated their activity depending on movement of transport aircraft and helicopters – and its commanders knew they were entirely unable to detect and track any aircraft operating at altitudes of less than 500m (1,640ft). The 27 SAM-sites were deployed too far away from each other, and each thus only covered a relatively limited portion of airspace: essentially, about 27km (17 miles) in horizontal axis around its position. At the tactical level, they were even more constrained by constant restrictions on their operations, imposed on a daily basis depending on the movement of transport aircraft and helicopters. The reason was that although all of the UARAF aircraft and helicopters were equipped with interrogation friend or foe (IFF) transponders, these were considered with suspicion – primarily by Amer and Sidqi Mahmoud, neither of whom had full understanding of their function. The conclusion is that as of early 1967 the UARAF and the ADC actually still had no integrated air defence system.¹²

PURGE OF 1966

In the meantime, from March 1965 until July 1966, Lieutenant-General Riyadh attended the Higher Military College in Egypt, once again

distinguishing himself academically. However, on his return to active service he could not avoid the conclusion that the entire UAR armed forces were in disarray due to widespread patronage, nepotism, and corruption – all of which became possible primarily due to Amer's and Sidqi Mahmoud's mismanagement. Once again, he soon found himself involved in fierce disputes with both superiors, complaining that the mass of Egyptian officers – whether serving in the air force or the army – were preoccupied making money, rather than training their troops. Convinced that military commanders are not born, but made through education and experience, this time he urged for a reform of the armed forces aimed at enabling junior officers to excel and learn from their mistakes. When his demands were refused, Riyadh offered his resignation. Always pursuing the principle of rating loyalty higher than professional competence or merits,

FUAD KAMAL: AN OFFICER THAT SPOKE HIS MIND

Generals like Abdel Moneim Riyadh and Madkour al-Ezz were not the only ones to openly criticise the way Amer ran the UAR armed forces of the 1960s, and Sidqi Mahmoud ran the UARAF of that period. Another one was nobody less than the first Egyptian commander of an operational MiG-21 unit; Fuad Kamal.

Together with his elder half-brother Kamal Zaki, Fuad Kamal came from a high-ranking family of Circassian origin, which had served Egypt's rulers in the military and diplomatic fields since the early 19th century. He joined what was then still the Royal Egyptian Air Force in 1950 and, after basic training, was selected to fly de Havilland Vampires. Kamal subsequently converted to the Gloster Meteor F.Mk 4 and, in 1955, was assigned to the squadron commanded by his half-brother. A year later, the unit was still in the process of converting to MiG-15s at Dikhelia AB when Israel, Great Britain and France invaded Egypt. As described in Volume 1, while operating out of Kabrit AB on 31 October 1956, Fuad Kamal was shot down in an air combat, ejected from high-altitude, and landed badly. Following a series of adventures caused by his 'European' appearance, he got back to Cairo where his squadron had been evacuated from the Canal Zone and was greeted as one returning from the dead.

In 1958, Fuad Kamal was sent on a conversion course to MiG-17s in the USSR, and then shortly served with a squadron commanded by Shalaby el-Hinnawy, before being selected to train as a jet instructor at the Operational Training Unit at Inchas AB, where he flew MiG-15UTIs. Although spending some time in Syria during the times of the Union, he remained with the OTU and became a member of the first Egyptian aerobatics team that flew MiG-17s, before being assigned to No. 31 Squadron, in which he served together with Hafez al-Assad. In 1961, Kamal was back in the USSR for a conversion course to MiG-21s and then commanded No. 40 Squadron at Inchas AB – the first UARAF unit equipped with the type. In 1966, he was advanced in rank to the equivalent of a Wing Commander and assigned the command of Air Group 7, which consisted of three MiG-21 squadrons. Shortly before the June 1967 Arab-Israeli War broke out, Kamal flew an unauthorised, low-level reconnaissance mission over Israel, primarily to show his pilots that this was a relatively easy thing to do – they having been upset because the Israelis were frequently doing the same over Egyptian air bases.



Fuad Kamal in his full uniform with the rank of a Major-General (or, Air Vice-Marshal, as still colloquially used in Egypt) in 1972. (Fuad Kamal Collection)

Fuad Kamal was at Abu Suweir AB at the time of the June 1967 War, and was then placed in command of one of two 'scratch squadrons' assembled from surviving, repaired, and in some cases virtually reassembled MiG-21s. These achieved greater success than has ever been acknowledged, though they could not alter the outcome of the conflict.

Because of his low-flying mission over Israel before the war, he was summoned as a witness for the defence of Air Marshal Sidqi Mahmoud during the 'Committee of Truth-Finding', after the conflict. His recollection of the contemporary Air Chief was that of a strong and charismatic personality, who was nevertheless out of touch with modern weapons systems. Fuad Kamal was also highly critical of the way officers had been promoted to the senior positions solely on the basis of loyalty, rather than competence and merits, whereas the middle ranks were promoted on ability.

During the summer of 1968, Fuad Kamal was selected for a Staff Officer and Air Defence Commander course in Odessa

Amer reacted by reshuffling all the top commanders. However, instead of replacing them, he appointed them to positions in other departments, usually in complete disregard of their education and experience. Perhaps the best illustration of the consequences of this decision was the case of Major-General Mahmoud Khalil, chief of the DM1: this versed officer who was meanwhile de-facto the third most powerful person in the UAR, was replaced by Major-General Mohammed Sadek, who had no experience in military intelligence at all, nor sufficient connections to Nasser to influence his decision-making. Following the same pattern, Amer then ordered the re-deployment of the HQ UAC to Amman and, turning down Riyadh's resignation, appointed him as its new commander. For all practical reasons, the most professional and best-educated of top Egyptian military officers, was kept in exile.¹³

6

ESCALATION IN YEMEN

As of 1964, the 'Civil' War in Yemen was in a state of stalemate. The Royalists proved unable to win the conflict, or maintain larger bases inside the country, but a growing dislike of Egyptians enabled Imam Badr and different princes to attract support from additional tribes. Combined with the constant flow of advisors and supplies organised in the Saudi-sponsored British operation even once this became known to the public, this enabled them to remain present in the mountains, and to continue conducting hit-and-run attacks on selected Republican and Egyptian outposts. Republican control over major urban centres – and the widespread

(present-day Ukraine): a year later, after completing this, he was sent to the Air Defence Command, where he served as a fighter commander during the War of Attrition, as a Deputy Chief-of-Staff to Hosni Mubarak. Kamal arrived at this point during the period of renowned Israeli ambushes of Egyptian interceptors, especially close to their air bases: he helped work out what was happening and develop counter-tactics that became known as 'ambush traps':

The Israelis claimed to have shot down many of our aircraft, mostly reconnaissance aircraft. Here we admit we had some losses, but lost very few MiG-21 interceptors. Many more

Su-7s and MiG-17s were shot down....The Egyptians were also very innovative. For example, our air force engineers added guns to MiG-21 variants that lacked them. They also constructed bigger fuel tanks, with capacity of 800-litres, and installed better, Martin-Baker ejection seats.

About a year later, Air Commodore Fuad Kamal retired from active service and entered the Egyptian diplomatic service. His first post was that of Assistant Air Attaché in London, before becoming the Defence Attaché. Privately, he pursued another passion and became a professional portrait painter.



From left to right: Fuad Kamal, Faruq Salamah, Sami Fuad, and Hosni Mubarak, seen in 1955. (Fuad Kamal Collection)

support of the majority of the population for the government in Sana'a – was never in doubt, but the Egyptian support for these became costly, further draining the already meagre resources of the government in Cairo. Nasser thus attempted to solve the conflict through negotiations: in September 1964, by when the UAR had about 40,000 troops in the country, he met King Faysal during the Arab League Summit in Alexandria, and the two agreed to seek for ways to a peaceful solution. Correspondingly, on 2 November of the same year, the Republicans and Royalists declared a ceasefire, and announced a major meeting of the leaders of 168 tribes, with the aim of electing a new national executive. However, the Royalists failed to show up, and Cairo then ordered a resumption of the ongoing UARAF campaign of air strikes by Il-28s and Tu-16s against major insurgent bases.¹

CULMINATION

In December 1964 and January 1965, the Egyptians ran four smaller operations in the Jebel Razih area, west of Sa'ada. However, these were their last offensives in the conflict: from that period onwards, they concentrated on maintaining available positions, while 'air policing' the insurgent-controlled areas with the help of UARAF bombers. Now skilfully commanded, the Royalists largely managed to evade, disperse, and then – supported by a constantly increasing number of artillery pieces provided thanks to the clandestine British operation – focused on interdicting the Egyptian supply links to Sana'a. In April, they launched a successful offensive against two mountain peaks dominating the road connecting Sana'a and Ma'rib. A similar operation undertaken a month later isolated all the Egyptian garrisons in

KAMAL DARWISH: CITY BOY WHO BECAME A BOMBER PILOT



Kamal Darwish seen on graduation of Air Group 61's new crews in 1958. (Nour Bardai Collection)

Whenever one chats with veteran UARAF officers about Egyptian Il-28 and Tu-16 pilots of the 1960s, there are three names that are always mentioned: Hosni Mubarak, Usama 'Bunny' Sidqi, and Kamal Darwish. With the career of the first two being explained in Volume 1, and above, it is the turn of the latter of the three. Of the same age as Gabr Ali Gabr, but in contrast to his colleague who was brought up in the Nile Delta, having been raised in Alexandria, Kamal Darwish



Kamal Darwish and his crew checking their watches prior to the next sortie, directly behind the Tu-16 bomber they were about to fly. (David Nicolle Collection)

declared himself a 'city boy'. His father's family came to Egypt from Morocco in the mid-19th century, while his mother's family stemmed from more recent Muslim refugees from Crete. Kamal thus looked unlike most of his fellow Egyptians. Having started a university course in agricultural science, he did not initially aim for a career with the air force. However, he eventually realised this profession was not for him, and thus joined the armed forces in 1954. Despite different backgrounds and initial career paths, he eventually became a close colleague and friend of Gabr Ali Gabr.¹



A pair of An-12BPs of No. 16 Squadron, seen in 1966, by when their deliveries were completed, and all the available aircraft were operated by Egyptian crews. (Albert Grandolini Collection)

After completing his basic training, Darwish was assigned to the squadron flying Meteors in 1956. With him thus collecting experience on twin-engined jets, he was subsequently selected to fly Il-28s, and assigned to No. 8 Squadron, a unit largely staffed with ex-Meteor pilots, commanded by Mustafa Hilmi (the second Egyptian Il-28 unit, No. 9 Squadron, was commanded by Fawzy Desouqi and largely staffed by pilots drawn from transport squadrons). Hilmi was one of only two pilots to fly nocturnal air strike with Il-28s against Israel during the Suez War of 1956 (the other being Hamid Abd al-Ghafar). An entire flight of bombers was planned to undertake this mission, but several of the jets in question were destroyed by air strikes of Bomber Command, Royal Air Force. The survivors then evacuated remaining aircraft to the Luxor airfield, and – after the latter was hit by Republic F-84F Thunderjet fighter-bombers of the French Air Force operating from Israel – to Saudi Arabia.

After the war, the air force acquired additional Il-28s – including Il-28Rs that were equipped with reconnaissance

cameras – and established the two-, and then three-squadron strong Air Group 61 operating this type. Darwish's unit was primarily intended to support the Egyptian Navy, but was home based at Cairo West. He continued serving on the type until the complete transfer of Tu-16s to the UARAF, when Air Group 65 was established, which included a flight of bombers equipped with KS-1 anti-ship missiles. In the meantime, Kamal Darwish became one of only four Egyptian pilots qualified to fly long-range bombing attacks by night. He flew such missions together with Hosni Mubarak and 'Bunny' Sidqi during the Yemen War. All such missions were considered extremely sensitive, amongst other reasons because they included several attempts to kill Imam Badr, the leader of Yemeni Royalists.

At least one of Darwish's sorties targeted a camp just inside Saudi territory. Flying as wingman to Mubarak, about 1,000 metres behind, Darwish followed his flight leader at extremely low-altitude over the Red Sea, to avoid US-made radars deployed for the defence of Khamsi Mushayt AB. A few years later, Darwish met the Chief-of-Staff of the Royal Saudi Air

Force, who told him that there had been two MIM-23 HAWK SAM-sites in the area, one operated by the Saudis, and the other by the Americans – who, by accident, were drunk that night. During another such mission, Kamal Darwish suffered a decompression accident that permanently damaged his ears. Nevertheless, he continued serving and leading air strikes against targets in Yemen and Saudi Arabia in 1966-1967, and was in command of the Tu-16 equipped No. 36 Squadron as of 5 June 1967 (this is also where he experienced an episode that is going to be covered in Volume 3).

After the war, Kamal Darwish served with the High Command UARAF in Heliopolis, working closely with Gabr Ali Gabr, who by then was the Chief of Operational Training. He retired not long after the October 1973 Arab-Israeli War.



Co-author Dr. David Nicolle (right) with two veteran Egyptian fliers of the 1960s: Kamal Darwish (left), and Gabr Ali Gabr (centre).

Jawf Governorate, which henceforth had to be supplied from the air. Finally, in July 1965, the Royalists managed to concentrate a sufficient force to nearly overrun the garrison of Ma'rib. By October 1965, the insurgents began targeting Egyptian bases and governmental institutions inside Sana'a, too. Undaunted, and despite the meanwhile precarious financial condition of the UAR and negotiation attempts by the USA and the USSR, President Nasser vowed to stay in Yemen, and ordered an increase of the troop presence to about 70,000. Correspondingly, the campaign of air strikes by UARAF bombers was further reinforced. By the summer of 1966, this air policing campaign was once again widened to insurgent bases in southern Saudi Arabia. Reinforced through the addition of British-flown Hunters, the RSAF launched numerous attempts to catch one of the intruders and, according to unofficial Egyptian sources, its interceptors eventually managed to catch and shoot down two Il-28 bombers, killing both crews. Amer's reaction was to order the re-deployment of MiG-19 interceptors of No. 20 Squadron to Yemen.²

For the purposes of this deployment, the unit was actually split: knowing the UARAF could not keep 24 supersonic fighter jets operational that far away from their home base, Sidqi Mahmoud ordered a deployment of only 12 interceptors – with the help of An-12 transports – to Sana'a Rawdah, while the remaining 12 were all kept back at Hurghada airport, on the Red Sea coast. Salah Danish recalled the early days of this deployment:

We went to Yemen together with a MiG-17 squadron but did not fly any combat sorties since things had calmed down quite a bit. Most of the times we only flew training sorties. This was not easy because the airfield in Sana'a was high above sea level and aircraft behaved quite sluggishly and heavy on the controls during take-offs and landings. This earned us additional expertise we would otherwise never [have] learned in Egypt.³

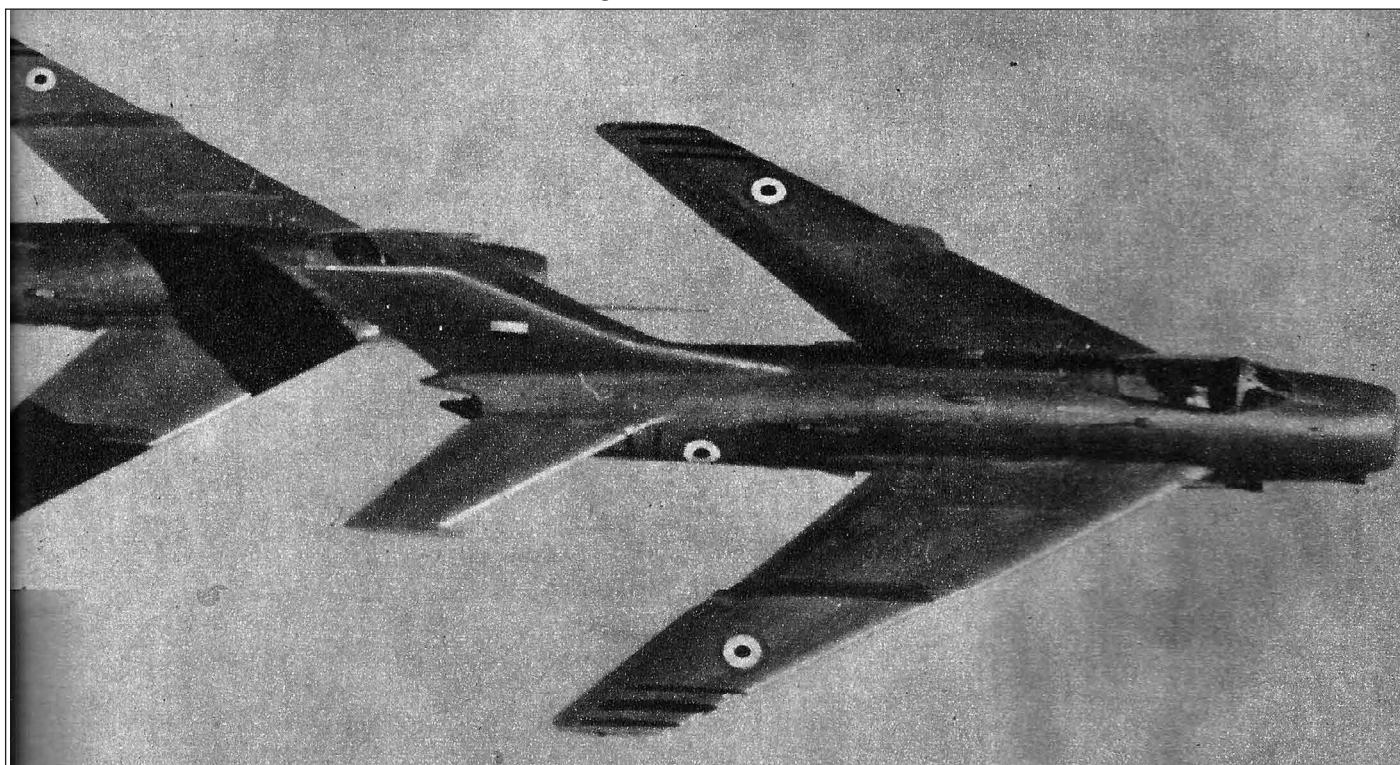
However, other Egyptian sources indicate an entirely different flow of the story: correspondingly, after flying a number of inconclusive combat air patrols, and – occasionally – escorting



Captain Hanafy Mahgoub (centre), commander of Air Brigade 61's detachment equipped with Il-28s, forward deployed to Hodeida AB in 1964. On the right edge of the photograph is Lieutenant Abdel Moaty Darwish, one of the most experienced Egyptian bombardier-navigators of the time. Mahgoub was killed in action during the June 1967 Arab-Israeli War, while Darwish went on to train several generations of navigators before retiring with the rank of air vice marshal in the 1980s. (Ahmed Keraidy Collection)



A pair of well-weathered Yak-11 COIN fighters warming-up their engines at Sana'a Rawda, prior to their next mission. Notable are launch rails for Sakr rockets under the wings of both aircraft. (Pit Weinert Collection)



A beautiful top view of a pair of MiG-19S from No. 20 Squadron in around 1965 or 1966. Notable is the application of the same grey colour overall, slightly smaller national markings than assessed at earlier times, and identification stripes around wing tips and the rear fuselage. These two aircraft belonged to the batch of 56 originally acquired by Egypt in 1960-1961. Sadly, their serials were removed by the Egyptian military censor. (Jens Heidel Collection)

bombers into air strikes on the Royalists, a pair of MiG-19s eventually caught one of the RSAF Hunters while escorting a pair of Il-28s into a raid on Najran, and claimed it shot down, in late October 1966.⁴

Unsurprisingly, not only were Il-28s soon back to flying air strikes on Royalist positions by day, but Tu-16s continued undertaking them by night: indeed, with the DM1 recognising that all the RSAF air defences were concentrated for protection of the Khamis Mushayt Air Base alone, the Egyptians even increased the tempo of such operations through late 1966 and early 1967: henceforth, Tu-16s were striking almost every night, while Il-28s would follow early in the morning, and lighter aircraft – like MiG-17s and Yak-11s – later during the day. Even more so once the High Command in Cairo made the decision for Egyptian units in Yemen to concentrate exclusively to protecting a triangle between Hodeida, Sana'a and Ta'iz,



A map of Yemen with air bases and other airfields used by the UARAF during the period 1966-1967. Shaded parts of the northern section of the country were those dominated by Royalist insurgents: these clearly show that during the last phase of the UAR involvement, the Egyptians and the Republican government gave up attempts to control any more than the areas along roads connecting major urban centres. (Map by Tom Cooper)



President Nasser greeting UAR Army troops withdrawn from Yemen in response to the agreement with King Faysal in September 1964. Tragically, the resulting ceasefire held for just a few days. (Albert Grandolini Collection)

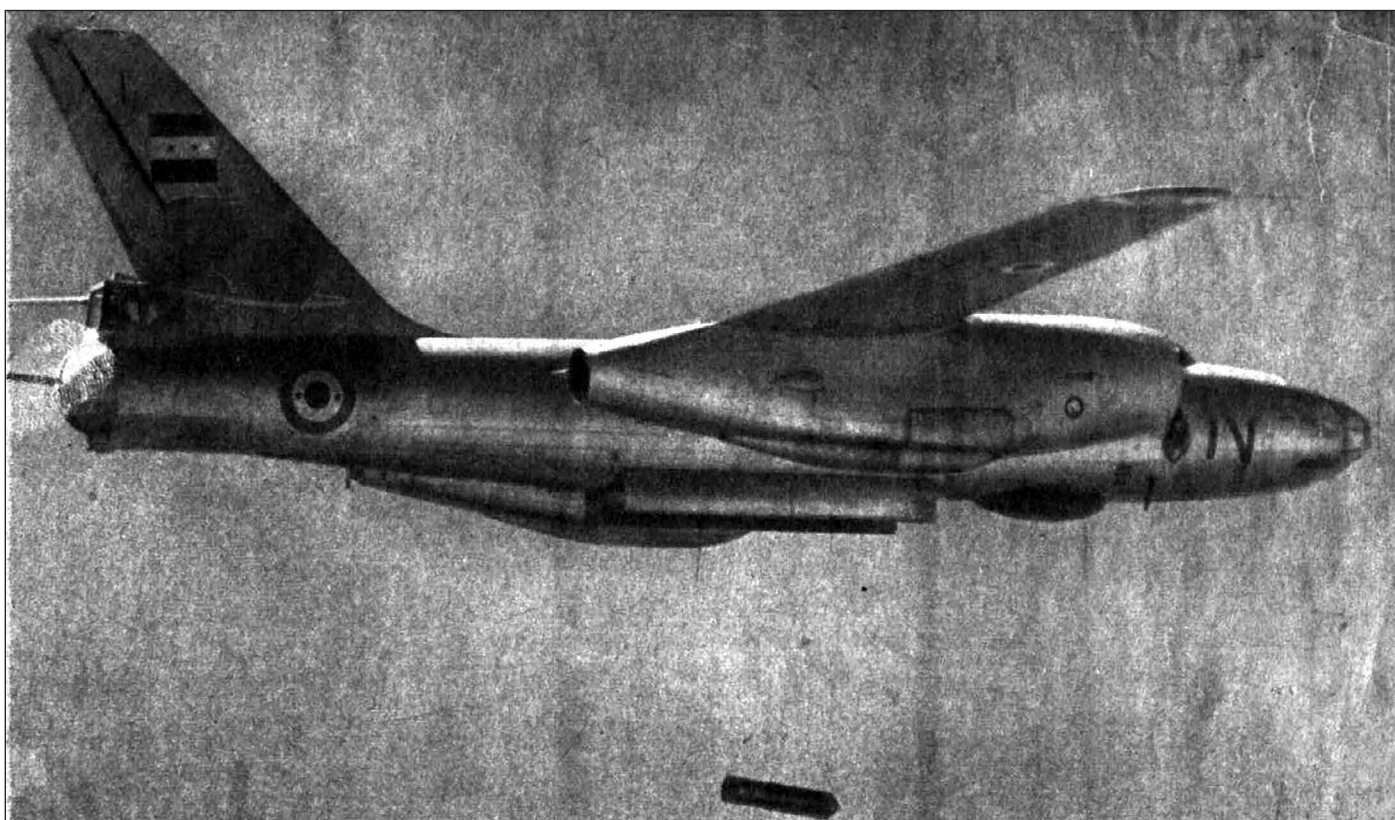
while leaving the Republicans to attempt maintaining their control over remaining major urban centres. Effectively, this left more than 50 percent of Yemen – stretching from the mountains overlooking the coast in the west, to the mountains overlooking Sa'ada in the north, and Ma'rib and Harib in the east – under insurgent control. In turn, during this period the UARAF began targeting not only insurgent bases and supply depots, but also villages of tribes that fought on the Royalist side, often causing severe civilian casualties and massive destruction of property and livestock. Essentially, this is how the situation remained until the end of the Egyptian military intervention in the country, prompted by the June 1967 Arab-Israeli War.



A group of pilots from No. 20 Squadron, discussing their next training mission along the Suez Canal. As well as three MiG-21F-13s visible in the background, notable is an ex-Iraqi MiG-19S behind them, decorated with the name of one of the major Arab cities applied in white: it is possible that this jet has also received a serial number. (Albert Grandolini Collection)



Il-28 coded 'Q1' seen on landing at an air base in Upper Egypt in 1962. Notable is the big national insignia on the rear fuselage: together with suffix '1', this is indicating an aircraft acquired to replace the losses of the Suez War. Visible in the foreground is one of the Il-14s of No. 14 Squadron: as usual these were painted in medium grey overall, but wore large round circles in red, containing the 'last two' of their serial on the nose. (*Ismail Yassin in Air Force, via Tom Cooper*)



Il-28 coded 'N' of Air Group 61, seen in the process of releasing a 100kg FAB-100M-46 bomb over northern Yemen. The unit suffered a loss of four jets in operations in 1965-1966: two were shot down by RSAF Hunters; one crash-landed into the sea, with the loss of the entire crew; and one made an emergency landing at Hodeida AB following a hydraulics failure. (Nour Bardai Collection)

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- Fayez Baqir (IrAF)
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- Fikry el-Gindy (EAF/UARAF)
- Gabr Ali Gabr (EAF/UARAF; 'Notes')
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As well as the officers mentioned in the acknowledgements, the following officers and other ranks of the SyAAF have been interviewed for this project over the time, whose names we do not feel free to reveal for concerns related to their safety and that of their families:

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'Boudros' (retired MiG-21 pilot, SyAAF), interviews in October 2001, March 2007, October 2008, November 2015, February 2016, April 2018, March 2021

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'Duha' (retired SyAADF officer), interviews, August 2004, March 2007, July 2013, November 2015, February 2016, April 2018

'E. R.' (veteran of the IDF), interviews, July 2012

'Hashim' (retired SyAADF officer), interviews, March 2005, March 2006, July 2013, November 2016

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NOTES

CHAPTER 1

- 1 Unless stated otherwise, this sub-chapter is based on Gabr Ali Gabr, interview, 04/2005; Labib, *The Third Arm* & al-Jawadi, *In Between the Catastrophe* (Chapter 2, containing memoirs of Major-General Mohammed Sadek, Chief of the Main Department of Military Intelligence from late 1966 until June 1967).
- 2 Unless stated otherwise, this sub-chapter is based on Lambeth, *Russia's Air Power at the Crossroads*; Grau et al, *The Russian Way of War*; Dabrowski, *Hunt for the U-2*; al-Jawadi, Martyr Abd el-Moneim Riyadh; al-Jawadi, *In Between the Catastrophe* (Chapter 2); Fawzi, *The Three Years War*; Glassman, *Arms for Arabs*, and interviews with several top EAF/UARAF officers (foremost Gabr Ali Gabr, Shalaby el-Hinnawy, Farouk el-Ghazzawy, Ala'a el-Din Barakat, and Samir Aziz Mikhail).
- 3 More precisely, the early Vozdukh-1 consisted of following major elements: Object 2B (the station – including a ZiL-157K truck, trailer, and ESD-60 electric generator – receiving information from early warning radars and forwarding this information to the command post, 8D); Object 8D (command post, consisting of a ZiL-157K truck, trailer and the ESD-60 electric generator, providing information from the 2D to the higher level); Object 11D (including Objects 15D and 21D, which served as command posts for an air defence division); and Object 6B (two trailers and a radio station that served as ground control for manned interceptors).
- 4 The Lasour is transliterated in different fashion, and often known as 'Lazur'.
- 5 Conclusions based on al-Jawadi, *Martyr Abd el-Moneim Riyadh*; al-Jawadi, *In Between the Catastrophe* (Chapter 2); Fawzi, *The Three Years War*; Glassman, *Arms for Arabs*, p.24, and interviews with Gabr Ali Gabr, 04/2005; Samir Aziz Mikhail, interview, 06/2014; Barakat, interview, 03/2003.
- 6 Glassman, p.24. The conclusion that the order for Tu-16s was Nasser's decision motivated by rivalry with Iraq, is based on deduction: irrespectively of how many former UARAF officers the authors have interviewed, none of them had any kind of knowledge about the original decision to buy Tu-16s, and even less so about their early operations in Egypt. Indeed, the type was never mentioned by any Egyptian publication before 1966. While a part of this can be explained with the secrecy surrounding its combat deployment in Yemen (to be discussed in subsequent chapters), the matter of fact is that over time the authors have found at least one veteran capable of providing detailed oral narrative about every other major acquisition of Soviet-made combat aircraft since 1955 – just none about the order for Tu-16s – and this despite relations to multiple pilots that used to fly the type. On the contrary, and as is to be discussed in subsequent chapters, over the following years the acquisition of Tu-16s became a topic of fierce controversy between several top officers of the UARAF and Amer, leading to several resignations or early retirements. The conclusion is thus on hand, that the leadership in Cairo never consulted anybody from the UARAF before ordering this type – most likely as a status symbol made 'necessary' by the Iraqi acquisition of Tu-16s.
- 7 Glassman, p.24.
- 8 Unless stated otherwise, content of this box is based on Brandner, *Life between the Front Lines*; N. Bardai, interview, 10/2009; K. Bhargava, interview, 10/2009; K. Bhargava, 'Messerschmitt's HA-300 and its Indian Connection', *Bharat-Rakshak.com*; K. Chatterjee, 'Hindustan Fighter HF-24 Marut', *Bharat-Rakshak.com*; Green, *The World's Fighting Planes*, p.77; 'India/UAR Supersonics', *Flight International*, 4 March 1965; Aly Labib, 'HA-300: Supersonic Egyptian Aircraft' (unknown aerospace magazine from the mid-1960s).
- 9 As designer of the most produced fighter aircraft ever (Messerschmitt Bf.109), member of the NSDAP, and considered a 'Nazi follower', Professor Messerschmitt was strictly prohibited from working on any kind of defence-related projects after the Second World War, and his movement was strictly limited. However, he escaped to Spain in 1951, at the time the country was isolated and under the dictatorship of General Francisco Franco Bahamonde, and thus isolated on the international level. Reinforced by a small team of German defence scientists, Messerschmitt started working for Hispano Aviacion, producing numerous new aircraft designs.
- 10 Ferdinand Brandner was an aerospace designer, but joined the NSDAP in 1930, and reached the rank of *Standartenführer* of the SS of the Nazi Germany. He was captured by the Soviet Army in Prague, near the end of the Second World War, brought to Moscow, and assigned to work with Nikolay Dmitriyevich Kuznetsov, a Soviet engine designer. Their designs were manufactured in a factory in Kuibyshev, in the USSR, consisting of machinery taken from the former Junkers factory in Dessau and BMW factory in Stassfurt. After spending nearly a decade in Egypt, in 1972-1973, Brandner worked as a professor in the People's Republic of China, giving lectures on engine construction.
- 11 Contrary to reports in the West, the mass of which questioned the feasibility of the HA-300, from the standpoint of the involved Austrian and Germans, it was a serious project that was to lead to the series production of both the aircraft and the engine. Indeed, Brandner and Kamil – and the third crucial person in this project: Colonel Mahmoud Khalil, chief of the Egyptian Military Intelligence (DM1) from 1952 until 1966 – went as far as to plan for all the related factories to be completely staffed by Egyptians. Correspondingly, MTP took care not only to obtain the best available machinery, but also to construct a training facility for native engineers: the latter graduated 30 engineers and 120 technical specialists in the first year of its existence (1960-1961) alone.
- 12 El-Ghazzawy, interview with Lon Nordeen, 03/1999; Barakat, interview, 03/2003; Samir Aziz Mikhail, interview, 06/2014; CIA, *Soviet Military Aid to the United Arab Republic, 1955-66*, March 1967, Central Intelligence Agency Freedom of Information Electronic Reading Room (henceforth CIA/FOIA/ERR).
- 13 Teterin, *In Egypt and in Zanzibar*; CIA 'The Arab-Israeli Situation', 6 December 1961, CIA/FOIA/ERR, p.15; Ferris, Nasser's Gamble (quoting from the document 'Annual Report on the Armed Forces of the United Arab Republic for the year 1962', filled by the Foreign Office on 29 January 1963. 'Hosni Mubarak: President of the Arab Republic of Egypt', *TASS*, 27 May 2004; 'Mubarak's Aircraft: President of Egypt was Befriended to Ryazan Pilots', *Mala Rodina*, 24 October 2014; Ferris, p.97.
- 14 CIA, *Soviet Military Aid to the United Arab Republic, 1955-66*, March 1967, CIA/FOIA/ERR.
- 15 Gabr Ali Gabr, interview, 04/2005 & Hamdi, interview with Lon Nordeen, 11/1987.
- 16 Moneim, *Wolf in the Sun Disc*, Chapter 2.

- 17 *Manual on the Techniques of Piloting and Military Use of the MiG-21* (obtained by the Defence Intelligence Agency from Iraq, in 1963, and translated by the Foreign Technologies Division of the US Air Force in 1964 under the title *Fishbed C/E Aerial Tactics*); pp.56-60, 69-70, 115, 120, 131-132, 153; Abdullah, interview 02/1991 & Hamdi, interview with Lon Nordeen, 11/1987.
- 18 *Manual on the Techniques of Piloting and Military Use of the MiG-21*, p.115-120.

CHAPTER 2

- 1 Unless stated otherwise, this chapter is based on Cooper, *Hot Skies over Yemen*, Vol. 1., pp.10-15.
- 2 Middle East Record, Vol.2, 1961.
- 3 Teterin, *In Egypt and in Zanzibar* & Ferris, 'Soviet Support for Egypt's Intervention in Yemen'.
- 4 Between 1958 and 1963, Saudi Arabia underwent a period of deep crisis. Not only was the country on the brink of financial collapse, but its armed forces were then hit by the pan-Arabist wave to a degree where even prominent members of the royal family began demanding cultivation of close links to Egypt and democratic reforms. The government reacted by curbing spending to immobilise the armed forces, and locking them inside their barracks. Nevertheless, by September 1962, the majority of Saudi military officers were suspected of being at least sympathetic to Nasser, if not even with the Yemeni Republicans.
- 5 Associated Press, 'The Spokesman-Review', 8 October 1962 & Associated Press, 'Rebels battling Tribes in northern Yemen', 12 October 1962.
- 6 Gabr Ali Gabr, interview, 04/2005; Fikry el-Gindy, interview, 02/1999 & el-Gindy, *Egyptian Eagles*.
- 7 Unless stated otherwise, based on Gabr Ali Gabr, interview, 04/2005.
- 8 Cooper, *Hot Skies over Yemen*, Vol.1, pp.12-15; Cooper et al, *Hawker Hunters at War*, pp.16-17; Curtis, *Unpeople*, p.293; Hagedorn & Hellström, *Foreign Invaders*, p.65; Hart-Davis, *The War that Never Was*, pp.30-32; Schmidt, pp.24-26; Stuart-Paul, *The Royal Saudi Air Force*, pp.60-68.
- 9 Fikry el-Gindy, interview 02/1999 & Tamim Fahmy Abdullah, interview, 02/1991; Mohammed Okasha, interviews, 10/2008 & 05/2009; United Nations Security Council, 'Letter Dated 14 June 1964 from Permanent Representative of Saudi Arabia Enclosing a Summary Report', 17 June 1963; Flintham, p.163. Notably, the US satellite reconnaissance had already confirmed the presence of Il-28s in Hodeida in June 1963, but reported no presence of MiG-15s or MiG-17s, for details see CIA, 'Airfield under Construction near al-Hudaydah, Yemen', June 1963, CIA/FOIA/ERR. As is going to be described in detail by Martin Smisek in *Czechoslovak Arms Exports, Volume 2* – a forthcoming project of the Middle East@War series – these 20 Yak-11s from the second batch were delivered in the course of several flights to Egypt, between April and June 1964.
- 10 Fikry el-Gindy, interview, 02/1999 & Tamim Fahmy Abdullah, interview, 02/1991.
- 11 Fikry el-Gindy, interview, 02/1999 & Tamim Fahmy Abdullah, interview, 02/1991, Samir Aziz Mikhail, interview with Lon Nordeen, 02/1997; Mohammed Okasha, interviews, 10/2008 & 05/2009; Ahmed el-Keraidy (son of late Air Vice Marshal – and Tu-16 pilot – Abdel Wahab el-Keraidy), interview, 08/2010.
- 12 Teterin, *In Egypt and in Zanzibar*.
- 13 For details, see Nicolle et al, *Air Power and Arab World*, Vol. 4.

- 14 Details to follow in Nicolle et al, *Air Power and Arab World*, Vol. 6.
- 15 Tarek O. Sidqi, interview, 03/2021.

CHAPTER 3

- 1 Labib, *The Third Arm*; Fawzy, *The Three Years War*, Chapter 6.
- 2 Unless stated otherwise, based on Antonenko, O., Russia's Military Involvement in the Middle East, *MERIA Journal*, Vol. 5, No. 1, March 2001; Glassman, *Arms for the Arabs*, p.24; al-Jawadi, *In Between the Catastrophe*, Chapter 1 (also published as a separate book in Arabic, under the title *Picking up the Pieces*); al-Jawadi, *Maryr Abdel Moneim Riyadh*; Fikry el-Gindy, interview, 02/1999.
- 3 *Document 44*, p.1045
- 4 At least on paper, the Su-9 was superior to the MiG-21F-13 because it was much larger, thus carried more fuel, was powered by a much more powerful engine, and was armed with four RS-2U (ASCC/NATO-codename 'AA-1 Alkali') beam-guided air-to-air missiles. Moreover, and also in theory, it could be armed with two 30mm cannon (in comparison to MiG-21F-13's one), and its flight testing in the USSR has shown that it could outpace the MiG, and also reach higher operating altitudes.
- 5 Salah Danish, interviews, 12/2009 & 08/2010, 05/2014; Samir Aziz Mikhail, interview, 06/2014.
- 6 Tamim Fahmy Abdullah, interview, 02/1991.

CHAPTER 4

- 1 Unless stated otherwise, this sub-chapter is based on Hinnebusch, *Syria*, pp.17-42; Konzelmann, *Damaskus*.
- 2 Boudros, interviews, 10/2001 & 03/2007; 03/2007; Jabbar, interviews, 06/2003 & 03/2006. *The History of the Syrian Army*, Chapter 7. According to the later, Khalid Marwan Zain ed-Dien was born in Shahba, in 1939; Adnan Ahmad Hussein in Latakia, in 1941; Ahmad Adnan Yousef Nablsy in Aleppo, in 1939; Naseh Khalid al-Olwany in Hama, in 1932. Notably, Fayez Mansour and Sabri Bilal are known to have been sent to Egypt for training on Meteors and then MiG-15s, in 1955-1956. Reportedly Mansour was the only Syrian pilot to fly combat sorties during the Suez War of 1956 – while assigned to an EAF squadron.
- 3 Unless stated otherwise, the rest of this sub-chapter is based on Boudros, interviews, 11/2015, 02/2016, 03/2021; 03/2007; Jabbar, interviews, 06/2003 & 03/2006; Khalil, *The Fall of the Golan*; Moukiiad, *My Life*.
- 4 Moukiiad, *My Life* & Smisek, *Czechoslovak Arms Exports, Volume 1*.
- 5 Based on cross-examination of all available sources. Notably, Moukiiad recalled the 42nd Air Defence Regiment as responsible for protection of the Dmeyr AB and the 725th Air Defence Regiment as responsible for the protection of the Mezzeh AB, but Boudros provided more detailed recollection in this regard.
- 6 'Soviet 5th Training Center in Frunze, 1956-1992', *Easternorbat.com*.
- 7 Unless stated otherwise, this sub-chapter is based on Gat, 'On the Use of Air Power and its Effect on the Outbreak of the Six Day War' & Gat, *Britain and the Conflict in the Middle East*, pp.49, 96, 105.
- 8 Gat, 'On the Use of Air Power', p.1188.
- 9 Unless stated otherwise, this sub-chapter is based on Gat, *Britain and the Conflict in the Middle East*, pp.49, 96, 105.
- 10 Hinnawy, interview, 03/1989.
- 11 Gat, 'On the Use of Air Power', p.1188.
- 12 Gat, p.1098-1099 & Zeev Elron, 'Remarks on Air Power and the Six-Day War', *The Journal of Military History*, Volume 69, Number 3, July 2005, pp.811-817. According to Elron, the IDF/AF flew a

total of 171 combat sorties that day, including 84 ground attacks, and deployed 65 tons of bombs.

- 13 Boudros, interviews 10/2001 & 03/2007. According to Boudros, this was the second air battle between SyAAF MiG-21s and Israeli Mirages, and the second claim for an Israeli jet being shot down.
- 14 Gat, 'On the Use of Air Power', pp.1200-1201.
- 15 Gat, p.1202.
- 16 Hinnebusch, pp.44-48.
- 17 Gat, 'On the Use of Air Power', pp.1202-1203 & Boudros, interview, 10/2001.
- 18 Moukiiad, *My Life* & Boudros, interviews, 10/2001, 03/2007, 10/2008, 11/2015, 02/2016, 04/2018 & 03/2021.
- 19 Boudros, interviews, 10/2001 & 03/2007.
- 20 Boudros, interviews, 10/2001 & 03/2007.
- 21 Boudros, interviews, 10/2001, 03/2007, 11/2015 & 03/2021.
- 22 Khalil; *The History of the Syrian Army*, Chapter 7; Gat, 'On the Use of Air Power', pp.1208-1209
- 23 Khalil, *The Fall of the Golan.*, Boudros, interviews, 10/2001 & 03/2007; Jabbar, interviews, 06/2003 & 03/2006.
- 24 Konzelmann, *Damaskus*, pp.287-293. Certainly enough, Assad never forgave Hatum's treachery: he had him assassinated by agents of the notorious Syrian Air Force Intelligence, in Jordan, on 26 June 1967.
- 25 Unless stated otherwise, based on Boudros, interviews, 10/2001, 03/2007, 04/2018; Mohammed Zaki Okasha, interview, 05/2008, 11/2008; 07/2009; Amanullah Khan, interview with Usman Shabbir, 10/2008; John Frederick Farley (RAF test-pilot), interview with Lewis Gaylard, 01/1990.

CHAPTER 5

- 1 Tahsin Zaki, *Testament*.
- 2 Taher Zaki, interview, 02/1999; Sadat, *In Search of Identity*, p.144; CIA, *Soviet Military Aid to the United Arab Republic, 1955-66*, March 1967, CIA/FOIA/ERR.
- 3 CIA, *Soviet Military Aid to the United Arab Republic, 1955-66*, March 1967, CIA/FOIA/ERR. Notably, Hamdi recalled that several early Egyptian MiG-21FL pilots had reported reaching the speed of Mach 2.5 and higher.
- 4 Conclusion based on cross-examination of all available Egyptian sources and documentation. For comparison, Western sources almost unanimously report deliveries of much higher numbers of MiG-21s to the UARAF during the period 1961-1967. For example the CIA (in *Soviet Military Aid to the United Arab Republic, 1955-66*) reported the presence of no fewer than 164 jets of this type in the UAR as of early 1967. Various US studies of later date still list almost as many. For example, the paper *Israeli Air Superiority in the 1967 Arab-Israeli War: An Analysis of Operational Art*, by Lieutenant Colonel Ronald D. Jones, from June 1996 (CIA/FOIA/ERR), quoted the presence of 130 MiG-21s (and no fewer than 80 MiG-19s) in Egypt as of 5 June 1967 (as well as 20 MiG-19s and 60 MiG-17s in Syria, and 15 MiG-19 in Iraq). Similarly, quoting official IDF documentation, Danny Shalom in his – otherwise excellent – book *Like a Bolt out of the Blue* (p.592), quoted the destruction of 99 Egyptian MiG-21s during the June 1967 War. Official IDF/AF report *Document AG-10-428: Total of lost Enemy Aircraft* (in Hebrew), published for the first time in the *Jerusalem Post* (English edition), on 11 June 1967 – and ever since maintained as 'the truth, and the only truth' by all the other Israeli and the mass of US sources – also quoted the destruction of 100 Egyptian MiG-21s during that conflict. For comparison, in his report listed in *Document 44*, the

Quartermaster General of the UARAF reported the presence of exactly 100 MiG-21s of all variants in Egypt as of the morning of 5 June 1967, and 22 of these still being operational as of 10 June 1967. The precise reasons for such exaggerated reports about the availability of MiG-21s to Egypt by US (64 percent) and Israeli sources (up to 50 percent) remain as unknown as those for cases such as reports of 70 MiG-21s and 20 MiG-19s in Syria, and – due to the stubborn refusal of even serious Israeli researchers to cross-examine official documentation more carefully, or research with the help of Arab sources – are unlikely to ever become known. Certainly enough, 'in the spirit of the Cold War', it was 'popular' to create the impression of the Soviets de-facto printing their combat aircraft on a xeroxing machine, and there being an unlimited supply of their jets. However, with hindsight, it is safe to conclude that this was never the case. Similarly, those that might insist on the thesis that 'Arabs always lie', might want to ask themselves if the Quartermaster General of the UARAF would trust himself to lie and inflate or hide the number of available and destroyed aircraft – perhaps to 'better fit' official Israeli reports, or deny these (?) – and that at the time all the top ranks of the Egyptian armed forces were vigorously investigated and prosecuted in the aftermath of the catastrophe of the June 1967 War.

- 5 CIA, *Soviet Military Aid to the United Arab Republic, 1955-66*, March 1967, CIA/FOIA/ERR (according to which the Soviets delivered 85 KS-1 missiles) & Ahmed el-Keraidy, interview, 08/2010.
- 6 For details on el-Shennawy's career with the EAF/UARAF, see Volume 1.
- 7 Zaki, *Testament*. Actually, Zaki erred in regards of Amer's reduction of the order for Su-7BMKs: instead of reducing the total to 36 aircraft, Amer reduced the total from 72 to 64.
- 8 CIA, *Soviet Military Aid to the United Arab Republic, 1955-66*, March 1967, CIA/FOIA/ERR; *Document 44*, p.1044-1945; Raspletin, *History PVO*; Jawadi, *In Between the Catastrophe.*, Chapter 3; Taher Zaki, interview, 02/1999. Notably, the Egyptians tended to designate their SA-75 Dvinas and their liquid-fuelled missiles the 'SA-1'. It was only in 1968 that they received first solid-fuelled missiles for this system: these became known as 'SA-2'.
- 9 Taher Zaki, interview, 02/1999 and Tahseen Zaki, *Testament*. Notably, together with Fahmi, Taher Zaki went on to build up the ADC into the force that dominated the skies over the frontlines of the October 1973 War with Israel.
- 10 Taher Zaki, interview, 02/1999. Content of the same was confirmed by *Document 44*, p.1060, 1065.
- 11 *Document 44*, pp.1043, 1060, 1063, 1065-1972. The same document (p.1065) describes the Readiness Rates of the UARAF as follows:
 Readiness Rate I: aircraft is parked near the end of the runway, fully armed and fuelled, with pilot in the cockpit, ready for take-off within five minutes of receiving the corresponding order.
 Readiness Rate II: aircraft is parked on the tarmac, fully armed and fuelled, with pilot outside the cockpit, ready for take-off within 10 minutes of receiving the corresponding order.
 Readiness Rate III: aircraft is fully armed and fuelled, but not manned, ready for take-off within 30 minutes of the corresponding order.
- 12 CIA, *Soviet Military Aid to the United Arab Republic, 1955-66*, March 1967, CIA/FOIA/ERR.

- 13 Al-Jawadi, *In Between the Catastrophe*, Chapter 2 and Fawzi, *The Three Years War*.

CHAPTER 6

- 1 Schmidt, pp.207-209.
- 2 Ahmed Keraidy, interview, 08/2010 & Salah Danish, interview, 05/2014.
- 3 Salah Danish, interview, 05/2014.
- 4 Ahmed Keraidy, interview, 08/2010 & Dan Glazebrook, 'The UK's Century-long War against Yemen', Mideasteye.net. 27 January 2016. Keith McCloskey, British researcher working on history of Airwork Ltd – the company that recruited British and other foreign pilots to fly Hunters for the RSAF of that period – wrote in response to authors' inquiry:
As far as is known, no Hunter was ever shot down by a MiG or Sukhoi fighter of any nationality, anywhere in the world.... One RSAF Hunter F.Mk 6 – the example serialised 60-601, delivered to Saudi Arabia on 2 May 1966 – crashed at Taif AB during a low-level flight in 1967. The pilot was Duncan Simpson. As far as the RSAF goes, this was the only Hunter loss I was able to find.... Similarly, although there was a number of RAF Hunters lost over the then Protectorate of Aden, some of them caused by small arms fire, they were not related to the Egyptians or to the Saudis.
On the contrary, Ray Deacon, another British researcher specialised in operations of the Royal Air Force in Aden Protectorate, expressed the opinion that an involvement of Hunters from the No. 6 Squadron, RSAF cannot be excluded. He pointed out that the *Military History Encyclopaedia on the Web* – run by J Rickard and available at www.historyofwar.org – contains an entry about a Hunter F.Mk 60 that was lost, '...in 1967, either in an accident or to Egyptian action...' Obviously, there is still a story left to be unearthed concerning the two UARAF Il-28s shot down over Yemen in 1966, and a possible Egyptian retaliation in the form of a downed RSAF Hunter flown by a British pilot. The author would greatly appreciate any help in solving this mystery.

Last box in Chapter 6

- 1 Unless stated otherwise, this box is based on Darwish, interview, 09/1999. Darwish's recollections were confirmed by Gabr Ali Gabr, interview, 04/2005 and Ahmed Keraidy, interview, 08/2010.

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Dr. David C Nicolle is a British historian specialising in the military history of the Middle Ages, with special interest in the Middle East and Arab countries. After working for BBC Arabic Service, he obtained his MA at SOAS, University of London, followed by a PhD at the University of Edinburgh. He then lectured in art history at Yarmouk University in Irbid, Jordan. Dr. Nicolle has published over 100 books about warfare ranging from Roman times to the 20th century, mostly as sole author. He also co-authored the 'Arab MiGs' series of books which covered the history of the Arab air forces at war with Israel from 1955 to 1973. Furthermore, he has appeared in several TV documentaries, and has published numerous articles in specialised press.

Tom Cooper is an Austrian aerial warfare analyst and historian. Following a career in the worldwide transportation business – during which he established a network of contacts in the Middle East and Africa – he focused on research and analysis of small, little-known air forces and conflicts, about which he has collected extensive archives. This has resulted in specialisation on the operational history of Middle Eastern air forces such as of those of Egypt, Iran, Iraq, Syria, Yemen, and about 20 African and Asian air forces, including those of Algeria, Angola and Libya. In addition to authoring and co-authoring about 60 books – including about four dozen titles for Helion's @War series – he has published well over 1,000 related articles, and appeared in more than a dozen international TV documentaries. Since 2017, Cooper has worked as editor of the five @War book-series.